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The American Scholar

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JOSEPH HENRY

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Our Debt to Joseph Henry, Scientist

MICHAEL I. PUPIN

Professor of Electro-mechanics, Columbia University

THE name of Joseph Henry is connected with a brilliant epoch in the history of the science of electricity. Prior to this brilliant period Stephen Gray's discovery, in 1729, of electrical conduction laid a broad foundation for subsequent work, while Franklin's discoveries and philosophical speculations in the realm of electrical phenomena gave a tremendous impulse to further research. Galvani's fortunate discovery of the existence of electric force in the contact region of heterogeneous bodies closes the preliminary period. Substantial progress was made during the eighteenth century, but the progress was, comparatively speaking, slow and laborious. The intellectual atmosphere of the eighteenth century was rather heavy and quiescent, as if foreboding the approach of a mighty storm.

The storm arrived; the intellectual forces which, like a mountain torrent, broke loose during the French Revolution and threatened to unhinge every human structure, receded rapidly to their natural channels. The torrent seemed to have washed away every impediment to rapid intellectual progress, and in every line of human thought a vigorous advance was initiated. Volta (1799) discovered the voltaic cell and taught mankind how to generate larger quantities of electricity in motion. Oersted (1819) discovered the magnetic force exerted by electricity in motion, and Ampère a year later (1820) formulated the fundamental law connecting this magnetic force with the electrical motion producing it. We have here three giants, Volta, Oersted, and Ampère, accomplishing more in twenty years than had been accomplished in the science of electricity during the previous 2,500 years.

Helmholtz and Thomson pointed out many years ago that Oersted's discovery is much broader than Oersted or even Ampère ever suspected, and that it embraces phenomena which those men never dreamt of, the phenomena of electromagnetic induction; or, to use a more descriptive expression, the phenomena of electric forces gen-

An address delivered at the Annual Meeting of the American Institute of Electrical Engineers.

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erated by the motion of magnetism. But to infer, from the existence of magnetic forces produced by moving electricity, the existence of electric forces produced by moving magnetism, it is necessary (as Helmholtz and Thomson point out) to have a clear vision of the principle of the conservation of energy. This vision did not appear until nearly thirty years after Oersted and Ampère had finished their work in electromagnetism. But even if this great principle had been formulated prior to the days of Oersted and Ampère, I doubt very much that the astuteness of any human brain would ever have gone so far as to infer, by pure logic, electromagnetic induction from electromagnetism. A logical deduction of this kind would stand today without a parallel in the history of human thought.

But Henry's experimental work and Faraday's experimental work had to be done, and their great discoveries had to be made, in the very manner in which those physicists made them, in order to reveal before our wondering eyes the beautiful phenomena of electromagnetic induction. Nature guards her secrets too well to reveal a whole world of startling phenomena to a man who makes no other effort than academic deduction by logic and pure reasoning. Our knowledge of physical phenomena advances by consecutive experimental steps; there was no direct line from Oersted and Ampère to Henry and Faraday. We had to wait for Arago, who demonstrated that electricity in motion magnetizes a steel needle, and we had to wait for Sturgeon, who subsequently, in 1823, showed that an electrical current circulating in a coil of wire wrapped around a horseshoe-shaped piece of steel made a magnet—a revolutionary discovery, the electromagnet. Henry was then a youth, twenty-four years old, tutoring in a private family in Albany, and in his leisure hours studying mathematics and reading such works as Lagrange's classical treatise on *Analytical Mechanics*. He had never had, up to this time, an instrument for research in his hands, but in less than five years he became the foremost authority, and practically the only authority, on electromagnets. At that time (this was prior to the discovery of electromagnetic induction) the science and the art of the electromagnet undoubtedly presented the biggest problem in physics, and the very fact that Henry chose this subject for his study proves that he was cast for a great physicist. Willard Gibbs, our great mathematical physicist, said once that the most essential difference between great and commonplace scientists is re-

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vealed in the quality of problems which they select. A great physicist knows a great physical problem when he sees it. The electromagnet was a great problem because it led to the discovery of electromagnetic induction; and this was the key, and the only key, that opened the door of the secret chamber within which nature guarded the secrets of electromagnetic induction. Henry found the key and he opened the door which revealed to our wondering eyes the phenomena of electromagnetic induction. At about the same time, and using the same key which Henry had invented, the electromagnet, Faraday, independently of Henry, opened the same door. There can be no doubt as to Henry's claim. Sturgeon said: "Henry has been enabled to produce a magnetic force which totally eclipsed every other in the annals of magnetism, and no parallel is to be found since the miraculous suspension of the celebrated oriental impostor in his iron coffin."

Henry worked day and night making electromagnets that could lift thousands of pounds. The magnets are still in existence at Princeton and at Yale. If the master-mind which constructed these magnets had not discovered electromagnetic induction, and at the very time when the discovery was made, the failure would have been a miracle far more wonderful than the discovery itself.

Henry, it is true, never pressed his claim seriously. But he never pressed a claim; he never claimed anything; he was as modest as an angel and as unselfish as a saint. Besides, electromagnetic induction was so wonderful, destined, as he says, "to form a new era in the history of electricity and magnetism," that he would not permit himself in so big a thing as that to stand as a rival of the great Faraday.

Fifty-one years ago I first saw Henry's discovery. At that time I was a student at Columbia, very fond of Greek and Latin, so fond of it, in fact, that I devoted most of my time to the study of Greek and Latin and classical literature. At the same time I was fond of mathematics and of physics and of chemistry, and there was a doubt in my mind whether, when I graduated, I should take up classical studies or physics as my life work. One day I saw an experiment performed in the lecture room by the late Professor Rood of Columbia. He had a coil of wire, the terminals of which were connected to a galvanoscope, which was attached to the side of the wall in order that the class could see the movement of the magnetic needle. The coil was in his left hand and a magnet in his right. He moved the magnet a little bit, and

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off went the needle to one side; and then he moved the coil back, and the needle moved in the opposite direction. It is generally believed that the magnetic needle moved because it was acted upon by the passage of electricity through the coil. Be that as it may, that needle, I am sure, was never as much thrilled as I with that experiment, and I said "Good-bye Latin, good-bye Greek, I am going to study physics."

Imagine how young Henry felt when he saw that magnetic needle thrill for the first time in the history of man as he moved the magnet in his modest laboratory at the high school in Albany. He himself tells what he thought of it—that it was destined to form a new era in the history of electricity and magnetism. It is obvious why this man, who was as modest as an angel and as unselfish as a saint, could not thrust himself forward to dispute the discovery with a man as great as Faraday was at that time.

The same modesty and the same unselfishness which Henry displayed with regard to his claim as independent discoverer of electromagnetic induction, we find again in the case of his invention of the electromagnetic telegraph. Innumerable schemes had been proposed by various men, and at various times, to transmit signals by electricity. Even the electromagnetic scheme was originated in many minds and at various dates subsequent to Oersted's discovery, but nobody understood the problem as well as Henry, and nobody succeeded in solving it until he himself found a solution in 1831. Barlow was one of the originators, but the distinguished physicist admits his failure when he says, in 1825: "I found such a sensible diminution (of the magnetic force) with only two hundred feet of wire, as at once to convince me of the impracticability of the scheme."

Wheatstone, another originator of the electromagnetic telegraph scheme, says this, in 1837: "It would not act, and could not act as a telegraph, because sufficient attractive power could not be imparted to an electromagnet interposed in a long circuit."

Wheatstone was not aware, in 1837, that Henry had demonstrated the practicability of the scheme in 1831, and that he wound up the description of his experiments in *Silliman's Journal*, by saying: "The fact that the magnetic action of a current from a trough is at least not sensibly diminished by passing through a long wire, is directly applicable to Mr. Barlow's project of forming an electromagnetic telegraph."

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Henry's success is due to his complete understanding of Ohm's Law, discovered in 1827. Barlow did not understand it because it had not been formulated when he made his telegraphic experiments in 1824, and Wheatstone did not understand it in 1837, because the law was formulated in Germany, and Wheatstone was an Englishman. Henry had no international prejudices. Ohm's Law, furthermore, was not the only thing involved in a complete understanding of the electromagnetic telegraph problem; the self-inductive reaction of the electromagnet, and of the long line, had to be adjusted, and Henry worked to make the resistance of the line and the self-inductive reaction of the line small in comparison with the resistance and the self-inductive reaction of the electromagnets. In other words, he used an intensity magnet and intensity battery when working over a long line. This is the alpha and the omega of the electromagnetic telegraph, and it belongs to Henry and to nobody else.

If the principle is true that that man is the inventor who first constructs and describes an invention in such a way that anybody skilled in the art can put the invention into practical use, then surely Henry is the real inventor of the electromagnetic telegraph. But Henry with his boundless modesty calls it Mr. Barlow's project, and never lays any claim to it. He even recommends, in 1856, that an extension of Morse's patent be granted to Morse.

It is easy to understand the motives which prompted me twenty-two years ago to back with all my heart and soul the proposition, first advanced by my honored colleague, Professor F. B. Crocker of Columbia University, that the unit of self-induction be named after Henry. The Congress of Chicago adopted this proposition; and it is a significant fact that the motion was made by an Englishman, Ayrton, and seconded by a Frenchman, Mascart, while the presiding officer was a German, the great Helmholtz himself.

In 1842 Henry described before the American Philosophical Society his wonderful discovery of electrical oscillations accompanying a Leyden jar discharge. He traced the magnetic action of these oscillations at a distance of thirty feet, transmitted through the walls and floors of a house, the detector being a steel needle magnetized by the transmitted oscillations. In this lecture Henry said: "The author is disposed to adopt the hypothesis of an electrical plenum, and from the foregoing experiments it would appear that the transfer of a single

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spark is sufficient to disturb perceptibly the electricity in space throughout at least a cube of 400,000 cubic feet of capacity; and when it is considered that the magnetism of the needle is the result of the difference of two actions, it may be further inferred that the diffusion of motion in this case is almost comparable with that of a spark from flint and steel in the case of light."

Who does not feel in reading these lines that Henry knew instinctively that he was facing here a problem containing boundless possibilities? I am sure that he saw before him wireless telegraphy and the electromagnetic theory of light. There was no topic that he loved to discuss with his friends as much as the oscillating discharge of a Leyden jar. I can imagine how a man of his years (he was only forty-three at that time), and of his accomplishments, must have been eager to throw himself heart and soul into the study of the great and fascinating problem which he himself had formulated.

But unfortunately for his own scientific work, after fourteen years of experimentation and academic duties at Princeton, Henry went to Washington to organize the Smithsonian Institution. He knew that this meant both an adieu to science for many years to come, and a bitter fight with crafty lawyers and cunning politicians who were eager to get hold of the Smithsonian Foundation, and to fight about what Smithson meant when he said that the foundation had been established for the purpose of advancing science and diffusing knowledge. The lawyers maintained that Smithson meant to build libraries and fill them with law books; and the politicians said that Smithson wanted to buy seeds and send them to farmers, through the medium of the Representatives—a wonderful way to secure new votes for Congressmen and Senators.

In spite of the craftiness of lawyers and the cunning of politicians, Joseph Henry won out in the long struggle because he had on his side both justice and Joseph Henry. The Smithsonian Institution was organized in accordance with his ideals, and is today both a splendid research laboratory, and a splendid museum. From the Smithsonian Institution, nurtured by Joseph Henry, sprang the magnificent scientific bureaus in Washington. He helped organize the American Academy of Arts and Sciences, but above all he was the inspiration of the scientific spirit in Washington.

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Joseph Henry

WILLIAM FRANCIS MAGIE
Henry Professor of Physics, Emeritus, Princeton University

IN the history of the sciences there are occasionally found instances of men who by the force of genius and industry but without academic education have advanced materially the science to which they devoted themselves. Such men in the history of American physics were Franklin, Rumford, and Joseph Henry. Of these Henry's work is the least considered and yet in some ways it was comparable with that of his great contemporary, Faraday, and deserves a more conspicuous place than it has generally received in the history of physical science.

Joseph Henry was born in Albany on December 17, 1797. His grandparents on both sides were immigrants from Scotland who reached New York in the early days of the Revolution. His father, a day laborer, died while Henry was still a boy.

As a child Henry showed no special genius or interest in study. In his early youth he became interested in the theater and for a year or two gave most of his time and thought to the production of plays, as a member and as president of an association of young people formed for the purpose of giving amateur performances. A casual reading of a popular book on physical science first showed him what delight there might be in scientific investigation and from that moment he decided to devote himself to the acquisition of knowledge. Finally by strenuous effort and great self-denial he prepared himself for admission to advanced classes in the Albany Academy. His progress through this institution was interrupted at least once by a period of school teaching but as he progressed his abilities were recognized and he was made assistant in the scientific courses. Thus without further interruption he was enabled to graduate from the Academy. At this point his formal education ended. It was, however, further advanced than that of either of his distinguished predecessors, Franklin and Rumford, and than that of his more distinguished contemporary, Faraday, but it was not enough to be of great assistance to him in his scientific work.

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What he accomplished came as a result of native genius and steady application.

After leaving the academy Henry was for two years tutor in the family of General Stephen Van Rensselaer. The close association into which he was thus thrown with one of the most refined and distinguished families of the neighborhood must have contributed greatly to his social training. The fact that he was chosen for such a position is evidence of the estimate in which his abilities and character were held. While in this position he used his leisure in studies preparatory to the medical profession. He also continued his study of mathematics and presented to the Albany Institute two or three papers illustrating by experiment some properties of steam and of expanding air.

Henry next served for nearly a year on the survey of a road designed to cross New York State from West Point to Lake Erie. The out-of-door life rehabilitated his health, which had been impaired by his close attention to study. While he was considering undertaking another piece of engineering work he was called to the professorship of mathematics and natural philosophy in the Albany Academy. He accepted and in September, 1826, entered upon his work.

Henry at once began experiments in what was then the new field of electromagnetism, but the burden of teaching seven hours a day was so heavy that most of his private work had to be done in his vacations. He seems to have worked very largely for his own pleasure and with little thought of his scientific reputation or indeed of the benefits which might accrue to the world from knowledge of his discoveries. We know from his reports to the Albany Institute that the improvements he introduced into the construction of the electromagnet, which transformed that instrument from what was little more than a toy into one of the most powerful adjuncts of scientific research, and of the practical application of the electric current, were made in the first year of his dealing with the subject; but he did not publish an account of his work until January 1831, after he had learned that Moll had succeeded also in constructing powerful electromagnets. The electromagnet as devised by Henry is exactly like that of the present day. Such magnets as had been previously made were formed by coating the iron horseshoe with wax and winding a bare wire around it in a loose spiral. Henry insulated the wire by wrapping it with silk or waxed cotton thread and was thus able to wind around the

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core many more turns of wire and to place these turns in more favorable positions. The magnets which he constructed in this way would sustain many times their own weight.

Henry next attempted to discover the conditions which would make it possible to actuate an electromagnet through a long circuit. He found that if the magnet was wound with a long wire in a continuous coil and if the battery used was one in which there were a number of cells in series, the magnet could be excited. On the other hand, a magnet wound with a short wire or with several short wires in parallel, while it could be excited in a short circuit by the single cell of a battery, was ineffective in the long circuit. He distinguished these two types of magnets as "intensity" and "quantity" magnets and pointed out that with an intensity magnet and a battery arranged for intensity —or, as Henry said, in such manner as to have projectile force—the magnet could be excited in a long circuit. By stringing a mile of wire around the walls of the auditorium of the Academy he set up such a circuit and so arranged a poised permanent magnet that, when his electromagnet was actuated, the permanent magnet was deflected in such a way as to strike a bell and thus transmit signals. Henry clearly recognized that this arrangement was immediately applicable for long-distance telegraphy. A few years later he so arranged his intensity magnet in the long circuit that it could make or break a quantity circuit in which one of his large magnets was included. This arrangement, called the relay, was independently invented by Morse and is an essential feature of any installation of the electromagnetic telegraph. The introduction of the electromagnetic telegraph for the transmission of messages over long distances was due to the enthusiasm and the protracted effort of Professor S. F. B. Morse. The immediate success of the first telegraph line between Baltimore and Washington and the rapid development of the system of lines all over the country gave Morse a great reputation. He was by most considered not only the successful promoter of electromagnetic telegraphy but also as the inventor of the appliances which were used in the system. Various suits were instituted by rival claimants to test the validity of Morse's patents, and Henry, who had made no claims of priority and had not patented his inventions, was forced to give testimony in court describing his own accomplishments. Many years later Morse undertook to show that he had had no assistance from Henry's

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work and even that there was nothing in Henry's scientific work which anticipated the electromagnetic telegraph as developed by himself. Henry made no answer to this attack, but submitted to the Regents of the Smithsonian Institution, of which at that time he was the Secretary, evidence to show what his own work had been. This evidence clearly demonstrated that Henry had invented the essential scientific elements with which the electromagnetic telegraph is constructed. This does not, however, detract from the credit which is due to Morse for his recognition of the immense importance of the telegraph in our national life, and for the zeal and courage with which he carried his project to successful completion.

In 1831 Henry published a description of an instrument by which the electric current in his magnets was used for the production of power. A steel magnet was poised horizontally above two electromagnets, in which the current was thrown alternately in opposite senses by an automatic commutating device, so that the poised magnet was made to rock to and fro like the walking beam of a steamboat. A somewhat similar device had been proposed in the previous year by dal Negro, but it is not known how far his proposal was put into practice. Henry's invention was of course entirely independent of dal Negro's. He considered the device merely a "philosophical toy" and realized that it could not be used as economically as the steam engine; yet he looked forward to the development of the electric engine, at least for use under circumstances in which convenience would outweigh considerations of economy.

On November 24, 1831, Faraday presented to the Royal Society an account of his discovery of the induced current. Speaking generally, this current is set up in a conductor whenever the magnetic field in which it stands is changed. When Henry received an account of this great discovery, which was not until June 1832 and then only in the form of a brief abstract of a lecture by Faraday, he recognized that he had obtained similar results in some of his experiments. He had felt that since it was possible to excite magnetism by the use of the electric current, the reverse action ought to be possible and that an electric current should be induced by magnetism. In the paper which he published soon after learning of Faraday's discovery, Henry describes an experiment which he says he had successfully tried before having any knowledge of Faraday's methods. In this experiment he

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had exhibited the essential features of the induced current. Just when this experiment was tried is not known. In the previous summer, however, that is, in 1831, Henry was constructing a large magnet and was insulating a great coil of wire for use in this investigation. His daughter, Mary A. Henry, after her father's death published a statement to the effect that from private communications from her father his family knew that he had observed the induced current, probably in 1830, and that his manifold duties and the lack of time and materials led him to postpone the further investigation of the matter until conditions were more favorable. Henry never claimed priority in this important discovery, but always recognized Faraday's right to it. If Henry had not been so notoriously dilatory in publishing accounts of his work and careless of his own scientific reputation, one might believe that he did not recognize the importance of his observations. In the same paper of July 1832 Henry described the first observation of what was called the extra current or the current of self-induction. This very important observation was developed by Henry in an extensive series of experiments, the results of which were published in 1835. In the meantime Faraday, without knowledge of Henry's original observation, had taken up the same subject. In this case Henry's priority is recognized, and because of it his name is given to the practical unit of induction in the accepted system of units.

The reputation redounding to Henry because of these discoveries led to his appointment to the professorship of natural philosophy in the College of New Jersey at Princeton. In November 1832 he moved to Princeton and for some years was occupied largely with the development of his courses of instruction. He found time, however, to construct a large electromagnet and to set up between his laboratory and his house a telegraph line over which he used to send signals when he wanted his lunch brought to him. In this period also he invented the relay, by which a current sent from his house through an intensity magnet would make or break the circuit in his large magnet. His work was so acceptable to the Board of Trustees that in 1837 he was given leave of absence for a year on full salary. He spent the year in England and France, where he made the acquaintance of many distinguished scientific men and in particular formed a close friendship with Faraday.

After his return to Princeton he began the investigation of what he

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called "the purely electrical part of Dr. Faraday's admirable discovery"—that is, of the currents produced in a secondary circuit by the currents in a primary circuit. These induced currents are only temporary. They were detected by a galvanometer or by electrolytic action when they were what Henry called "quantity" currents, and by the shock which they would give to the arms or body of a person forming a part of the circuit, when they were "intensity" currents. By the "magnetizing spiral," a wire wound in a spiral around a small glass tube or a hollow straw in which a sewing needle could be placed, Henry tried to determine the direction of the current. After the current had been passed the needle was generally found magnetized, and the sense of its magnetization was taken to indicate the direction of the current. Later on in his study of the subject, however, Henry found that in determining the direction of a current the magnetizing spiral was unreliable, owing to the fact that many of the currents through the wire were oscillatory in character, and a reversing of the magnetism of the needle with each oscillation left it finally magnetized by the last one of the oscillations which was strong enough to reverse it.

Henry found in general that with a quantity current in the primary he could excite either a quantity current or an intensity current in the secondary, according as the secondary contained relatively few turns of thick wire or a very large number of turns of a finer wire. Similarly, an intensity current in the primary could produce either a quantity current or an intensity current—effects which are now exhibited by the step-up or step-down transformer.

By connecting the coil used as a secondary with another through which the secondary current also passed, and by using this coil as a primary, Henry obtained induced currents of higher orders than the first, up to the fifth order. These currents of higher order were produced by induced currents which themselves were only temporary. When tested through the body they proved to be of considerable intensity. In one case such a current was sent through a circuit of fifty-six students of the senior class who felt the shock as from a Leyden jar weakly charged. From his success in obtaining induced currents from the temporary current of induction Henry was led to suspect that the discharge of what was then called ordinary electricity through a primary circuit might produce a current in a secondary. He

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found in fact not only that this was true but that the current in the secondary was one of great intensity; and further, that the inductive effect could be transmitted through considerable distances. In one case he discharged a Leyden jar through the telegraph line which ran from his laboratory to his house in front of Nassau Hall and detected by the magnetizing spiral an induced current in a parallel wire over two hundred feet distant in the rear of the building. Henry recognized that the action which passed through space between these wires must have been "a series of *plus* and *minus* motions, analogous to—if not identical with—undulations." In this experiment we have a precursor of the wireless telegraph.

These important experiments of Henry's, little noticed in his time and still almost unknown, were published from time to time in the *Transactions of the American Philosophical Society* or were reported orally to the same society and were mentioned merely in notes in its *Proceedings*. It is unfortunate for Henry's fame that he was so indifferent to giving his work the publicity which it deserved.

In December 1846 by a vote of the Regents of the newly established Smithsonian Institution Henry was called to serve as its first Secretary. He was very unwilling to accept the post, because he was in the full tide of investigation at Princeton and enjoyed his life as a professor thoroughly. He foresaw that the administrative work in which he would have to engage would take all his time and energy and might moreover involve him in many disagreeable controversies. He must have known, however, that the plan which he had proposed for the development of the Institution was one which would carry out the intention of the founder honestly, and he must also have been conscious that he was the one best fitted to put that plan into operation. Actuated, therefore, by a sense of public duty he determined to accept the position.

The Smithsonian Institution had been founded by a bequest from James Smithson, an Englishman, "to the United States of America to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." For nearly ten years after the £100,000 which came from this bequest was received the question of the proper organization of the institution was discussed in Congress. It was finally decided to entrust the administration of the fund to a Board of Regents who were di-

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rected to erect a building, to collect a library and museum, and to expend what remained of the income in the way best adapted to carry out the intentions of the founder. In Henry's first report to the Regents, which he made at the end of his first year in office, he outlined the way in which he thought the founder's purposes could best be fulfilled. He proposed to increase knowledge by stimulating and supporting research and by publishing the results of original work; and to diffuse knowledge by the publication of memoirs, of reports on the progress of science, and of collections of tables and of other useful auxiliaries for the advancement of science. His plans were adopted by the Regents and were carried out by him for thirty years. The Smithsonian Institution, as Henry developed it, has served since its foundation as one of the most important agencies for the discovery and dissemination of scientific knowledge.

The rapid expansion of telegraph lines over the country made it possible to receive reports of weather conditions from different points in a very large area. The initiation of a system whereby reports were regularly sent, largely by volunteers, to the Institution, where they could be studied, made possible the establishment of a system for the prediction of the weather, a function now belonging to another branch of the government.

Henry also served gratuitously for many years on the Lighthouse Board, giving much of his spare time to the experimentation needed to test proposed improvements or to develop them and spending most of his summer vacations in the later years of his life on the coast, engaging in experiments on the efficiency of fog signals and on the peculiarities of the transmission of sound at sea. And it was while engaged in such work in the summer of 1877 that he noticed the first symptoms of the disease which caused his death.

Henry died on May 13, 1878. His funeral was attended by all the great dignitaries of state, and in January of the following year memorial exercises held in his honor by order of Congress in the hall of the House of Representatives, were attended by both houses of Congress, by the President of the United States and his Cabinet, the Justices of the Supreme Court, the Regents of the Smithsonian Institution, and representatives of many scientific bodies. It was the greatest honor ever paid in this country to a man who was neither soldier nor statesman but distinguished only by his ability and noble character.

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Protestantism in Peril

ROLAND E. WOLSELEY
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SOONER or later the church was destined to come into open conflict with the individualistic economic order, but it remained for a breakdown in the system to make clear the fact that, in the United States at least, the Protestant church gradually is withdrawing its sanction from that order.

The dilemma of the church, therefore, is that its advanced thinkers find the principles upon which the institution is built incompatible with the principles upon which the society around it operates, and that the church as a whole is not ready to champion a new social order. Unless the church soon comes out strongly for a new society and achieves that society in a peaceful manner it will perish if and when individualism perishes, because it has continued to sanction the present scheme of things. Certain prophets foresee the possible destruction of the acquisitive society and of a religious body which approves it, not merely as a slow decay, but by a sudden destructive blow such as that dealt the church of Russia within our own experience. Others declare that the church will die slowly, that its influence is already on the wane. Still others believe there is a chance for survival from any immediate crisis. Norman Lyon reveals in a recent experience what still others, unclassifiable, think of the situation:

"Recently I called at the national headquarters of a certain Protestant denomination to interview an official.

" 'Can't you see,' said he, kindly but firmly, 'that you fellows are destroying the church when you destroy capitalism? The church stands or falls with the present economic order.

" 'I have many classmates and intimate friends who are preaching socialism from their pulpits. I honor their motive, but not their wisdom.

" 'This denomination, for example, has six hundred millions of property in this country, centralized at this office. We are now borrowing to the hilt. Our finances are precarious.

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" 'To be perfectly frank, you fellows are embarrassing. Suppose I agree with you, then go down to a big bank in Wall Street and say, "Loan us ten thousand dollars, but to hell with capitalism." Can't you see where as a church we are at?

" 'I agree with you that it might be better for the kingdom of God inside of men and the kingdom of justice among men if our churches did lose some of their high domes and pipe organs and cushioned pews, and we ministers had to go out and preach on the street corners, and follow our convictions to jail if need be. But, it's one thing to say that, and quite another to act on it.

" 'As for me, I merely say it. I'm afraid I can't be of any service to you. I certainly wish you luck, but hardly much success.' "

The church's realization that it cannot afford to condemn a social and economic order which is diametrically opposed to its historical tenets, such as brotherly love and justice for all, presents no freakish situation. We recognize at this point that the fate of the religious organization hangs upon debatable assertions. One is that we are "at the end of an epoch" and that individualism, or capitalism, and the capitalist church, are destined to perish. The Protestant church in the United States has championed the existing order so loyally as to gain the enmity of the powers for change. Another is that the church has a slight chance of regaining the confidence of the masses, granting that the confidence was ever won or lost, soon enough to save itself from destruction in any sort of social revolution.

Belief that the individualistic order has served its purpose and can now be discarded with little sorrow, except upon the part of those relatively few individuals who have benefited from it, is not a product solely of the first three years of the "period of readjustment" in which we find ourselves today. At the beginning of the present century a seer who sensed that the Protestants were once more protesting wrote a book entitled, *The Impending Social Crisis*, in which the collapse of the capitalistic order was predicted as within sight. J. Stitt Wilson has risen to the occasion once more and is as confident as ever that the epoch really is to end shortly, despite his slight previous miscalculation.

"The world we are now living in is not individualistic. It is social. It is collective in its fundamental industrial structure and it is social in its psychological reactions." Thus wrote William Montgomery

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Brown years ago, when his socialistic beliefs were too much for a capitalistic church and he was called a heretic. And most certainly there is good reason to believe that individualism is on the wane. More and more in this country we are availing ourselves of the cooperative enterprise. Only a few citizens seem to realize it, but in the management of business, as well as of government, socialization is a powerful factor. Someone remarked in the summer of 1932 that under Herbert Hoover more socialism had found its way into the United States than under any previous occupant of the presidential chair. Interference in private business by the government, through various commissions, is the charge against the anything but socialistically inclined Herbert Hoover. Exactly all that the depression will teach industrialists, bankers, and politicians about the advantages of a cooperative society is as yet unascertainable, but even the most unthinking admit (when they begin to think) that inasmuch as depressions most assuredly will occur again in an unplanned society, greater preparation to alleviate them should be made. The firmest enemies of individualism believe, of course, that if given enough rope it will hang itself. They accordingly discourage such patchwork as the Swope plan or any economic planning within the capitalistic framework. Why? Obviously because sufficient patching of the machine can keep it going indefinitely and prevent the achievement of a new social order based upon any other philosophy. Barring such a drastic change in the psychology of the American people as would convert their present apathy to a violent protest resulting in overturn by force, there is every reason to believe that individualism, with some modification towards the Fascist or Socialist ideal, will persist on these shores for many decades. Europe, being farther along the road of social development than this country, may be expected to form a cooperative society sooner than will the United States; but after a characteristically long demonstration by our isolationists it will be impossible, for economic reasons, for us to go on with the individualistic plan.

On the whole the loyalty of the Protestant church in America to the *status quo* is hardly to be questioned. Of course there always have been dissenters and renegades. The Christian Socialist movement is no stranger to this country, having been in existence either here or in Europe for nearly a century; but on the whole the church is firmly rooted in the society upon which it thrives. In its business relations the

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church in general has found nothing wrong with the idea of investment and speculation, with the purchase of real estate in the hope of realizing several hundred per cent profit years hence, or with accepting much of its money from financiers whose methods of obtaining the wherewithal for their philanthropy had best be left uninvestigated. Advocates of stewardship have stopped at investigating the source of the tithe. "We do not have a free church," recently declared a journalistic critic of the church. "It is bound in comfortable subjection to the forces and resources of the economic order, just as it found itself bound in blind subjection to the secular state during the War. . . . The church's own vested interests almost guarantee that it will have precisely the same slant on an economic question as that which all other privileged interests take."

Rarely has the church questioned the practices of its members except in their personal lives. A man who commits adultery is scorned, but a man who exploits children in his factory must not be questioned, because business is considered by our "best minds" and our "world's greatest newspapers" to be outside the province of the church. A list of some of the sinners of today, compiled by Kirby Page for another purpose, fits in well here as a record of the groups practically uncondemned by the church; and serves as evidence of satisfaction with, indifference toward, or fear of the individualistic order from which the church receives most of its power:

> An up-to-date list of notorious sinners would include: investors who live in luxury from unearned income derived from the cruel exploitation of women and children; malefactors of wealth who maintain their privileges and power by corrupting public officials, suppressing collective action on the part of their employees, and poisoning public opinion through a subsidized press; trade unionists who betray their comrades by accepting graft, and those who seek a privileged position for their own craft at the expense of other workers; consumers who purchase in the lowest market, oblivious or indifferent to the fact that these commodities are often covered with the blood of sweated laborers; women who fritter away their time and energy in a meaningless round of social activities; citizens who regard with indifference, indulgence, or cynicism the dangerous policies and corrupt practices of public officials; office holders who take petty bribes or wholesale graft in the form of tariff manipulation for their chief supporters; militarists and patrioteers who endanger international peace by generating fear and releasing chauvinistic passions; journalists who debase public morals by pandering to lust and sensationalism, and who create

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social crises by distortion and jingoism; racial bigots who use the plea of "racial purity" as a smoke screen to hide discrimination, exploitation, and barbarity; trustees of educational institutions who victimize professors because they present unpopular truths; educators of craven spirit who hypocritically teach what they do not believe, and hide their real convictions because they fear consequences; church officials who seek to silence the prophetic voice when it menaces vested interests; clergymen who permit their vision to grow dim, their zeal to flag, their courage to ooze away, and their willingness to make sacrifices to become paralyzed—all these are notorious sinners.

Against a few such sinners the church has spoken, but only very few and then when the weight of public opinion was behind its condemnation. It is not dangerous for individuals or institutions to denounce that which all about them are denouncing. Over a long period the Protestant church has come out forthrightly on only one subject with which the layman commonly considers that it has no business to meddle. That is liquor. Whether rightly or wrongly is no matter here, but it must be admitted that the church has defied public opinion persistently on this one score. It hardly has been so outspoken about the much more important social evils of the day. In fact, as Harry Emerson Fosdick points out, "Much of our contemporary Christianity is not making people better, but worse. It accentuates bitterness, sanctions ignorance and bigotry, divides those who might else be brotherly, and lapses from its high possibilities into a force for spiritual deterioration and decay."

While on the part of the powers seeking its change the attitude toward the Protestant church in America is by no means so much one of hate and disgust as was the case in Russia, Spain, and other countries which have tried to liquidate it, to use the Soviet term, there is basis for feeling that if some such movement as Communism came into power here, the institution would be manhandled. There is absolutely no reason to doubt that, simply because it has to do with religion, the Catholic church in particular, and also the Protestant, will suffer greatly if a Communist régime should be set up in these forty-eight states. As is well known, the church is ridiculed, hated, and despised by the Bolsheviki. American Communists, stupidly enough, denounce church and religion alike, apparently unaware that there is a growing surge to the left among ministers and laity. If, in the next half century, the increasingly powerful liberal movement in the United States should,

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by support of the Socialist Party or some amalgamation of third-party movements, establish a cooperative social order, the church, especially the Protestant, might experience a pleasanter fate than it will undoubtedly suffer if William Z. Foster *et al.* get their way.

That fate would be so much the pleasanter of the two possibilities that for purely selfish reasons of self-perpetuation it behooves the leaders of Protestantism to acquaint themselves with the situation. There are many bases for this belief. The relatively small left-wing in Protestantism is clinging to Socialism as the only economic order which Christianity can sanction. On several scores it refuses to approve of Communism, one of the most important reasons being that Communists would establish the new society by force, and, at the outset at least, maintain it through force, with the resulting denial of civil rights. The left-wing fails to see logic or dependability in seeking to achieve the brotherhood of men by an espousal of everything, such as class hatred, ruinous to brotherliness among men.

Because of this left-wing loyalty the liberal leaders would be inclined toward mercy, realizing that if some of the clergy can see the light it is possible that most of them eventually will, and will thus bring with them a huge group of converted laymen. One must also reckon with an attempt, of more than twenty years' standing, to build up an American version of the Christian Socialism which at one time was powerful in Europe and which is still extant in some countries. For eighteen years the Christian Socialists in the United States had their own publication and a thriving organization known as the Fellowship of Christian Socialists, devoted to the spread of propaganda. The various disrupting influences that about the time of the World War arose to emasculate the Socialist Party in America likewise did their work to Christian Socialism, but the movement, inspired by the depression, has come to life once again. Imagining a sufficiently strong revival of the Christian Socialist movement, an amalgamation of the various organizations and individuals of the church championing or leaning toward Socialism, and the continued increase of power of persons of religious inclinations in the Socialist movement; it would not be difficult to foresee a tolerance toward the church that would have horrified the somewhat atheistically inclined worshippers of Eugene V. Debs back in the heyday of Socialist power before the War.

Substantiation of the statement that a left-wing of Protestantism is

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swinging toward Socialism would be revealed by such an investigation into a score of widely known church organizations as is made occasionally by our leading national "red" baiters, the Daughters of the American Revolution, the American Legion, the American Vigilant Intelligence Association, the National Civic Federation, the National Security League, and the Better America Federation, to mention only a few societies which revolve around the books by Nesta Webster and the Fish and Lusk reports. The Church League for Industrial Democracy, the Methodist Federation for Social Service, the Federal Council of Churches of Christ in America, the Christian Social Action Movement, the Fellowship of Reconciliation, the Ministers' Union, the Fellowship of Socialist Christians, and various smaller organizations aim ultimately at the creation of some variation of a collective society.

Editorially, many religious periodicals are defying the existing order and calling for action by the church in the establishment of a juster economic system. Aside from the national non-denominational weeklies and monthly periodicals, many denominational publications are hammering away at this problem.

Along with these organizations which are playing a part in the attempt to change the economic order, many church groups are working heroically to abolish war. In recent years the clergymen, not only in the Protestant denominations, but in the other Christian and in the Jewish churches of America, have courageously denounced war. When the next one comes (if it does) there will undoubtedly be a larger number of conscientious objectors than ever before. The World Peace Commissions, the Committees on Militarism in Education, and the National Councils for the Prevention of War soon learn, however, that war is an inseparable part of a capitalistic and individualistic society, and will finally be abolished, not by such a single step as disarmament, but by a drastic change in the basic economic system. Thus many a churchman or layman, in order to achieve his ideal of world peace, is driven to the support of a movement for a cooperative society.

This raises the question whether the Protestant church can tear itself quickly enough from dependence upon the individualistic society which has so long fed it as to enable it to throw its power with those radicals outside the church who are persecuted or at least denied power. One of the leaders of the left-wing, Ernest F. Tittle, has no

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doubt that religion will survive any crisis or that the man-made institution of the church will survive. "The church is not going to die. It has too much momentum behind it to come to a dead stop. It is too firmly supported by the affections and investments of millions of people to fall."

About the immediate fate of the Protestant church in America, despite the leadership of the left-wing, it is difficult to insert here so cheering a prophecy. The church will not die, admitted. It is not dead in Russia or Spain. If the people want religion the church will return, though possibly not in its present form. But it seems inevitable that if and when the social crisis comes, the church will suffer. It is now suffering. Much depends, of course, upon the rapidity with which the crisis arrives. If the present generation of young ministers and young laymen is permitted to live and if it passes on its ideals to its successors, the church may be saved from downfall. Except in the case of a few courageous older men among the leaders, there is little to be expected from those who are enthroned in the Protestant church today. The Methodists, for example, historically one of the most liberal Protestant denominations, in the third year of the depression offered an outspoken declaration on race prejudice and a restatement of their attitude on world peace, but paid little attention to the economic situation, except to make themselves more secure; and concerned themselves primarily with making more firm their antiquated and undemocratic system of government by the episcopacy, and with the perpetuation of their faith in prohibition as at present administered.

There is too much bulk in the church for quick movement. As usual, it is the intelligent minority that must point the way for the others to follow. The average church member (is such conceivable?) will not quickly withdraw approval of our predatory society. He can only be weaned away by a slow process of education. It is impossible (and inadvisable even if it were possible) to stir church people to mass action and obtain lasting results. Violent revolution within the church is just as objectionable as violent revolution outside it. Instead of gaining, the church would lose; because founded in individualism, the ecclesiastical structure, without a stabilizing influence, would collapse.

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The Humanity of Mathematics

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NO one, I hope, will be deterred from reading this essay by the mere presence in its title of the term mathematics, for to follow the discussion understandingly demands neither an extensive knowledge of mathematics nor the rare gift of special mathematical aptitude. All that is required is a little logical acumen and a moderate degree of disciplined attention.

Any great Form of human activity—mathematics, science, art, philosophy, literature, religion, and so on—reveals, in some measure, what is most characteristic and most significant in the distinctive nature of Man; and any such Form at the same time serves as a more or less potent agency for guiding the conduct of human life. The measure in which it performs the twofold function of revelation and guidance is the measure of what I call its humanity. In respect of that measure, it is commonly held, rightly or wrongly, that the cardinal enterprises of mankind differ greatly, occupying different levels in a hierarchy of human significance and human worth.

My present task is that of appraising the humanity of mathematics. To perform it completely I should have to deal with sheer Mathematics, with mathematical Applications, and with what I call the Bearings of mathematics: three things which, though interrelated in many subtle ways, are yet radically distinct. To handle the three themes adequately in a brief essay is impossible. It seems best to treat but one of them and I have chosen the third one. There is a special reason for the choice. The other two themes have been treated often and are the subject of an extensive literature, while the *bearings* of mathematics, though the subject is a highly important one, have never, so far as I am aware, been accorded the distinction of serious and systematic consideration.

By the bearings of mathematics I mean a certain rich manifold of

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light-giving relations that connect mathematics with those great human interests and human concerns in which there is, properly, no question of establishing mathematical propositions or of making mathematical applications to one or another kind of subject-matter. Such interests and concerns human life has always had and continues to have in greater and greater measure. We are to see that many of them can be much clarified, deepened, and advanced by study of the relations in question.

Our theme is the humanity of mathematics as revealed by the bearings of mathematics upon the universal concerns of mankind. From among such bearings I select for initial consideration a very grave one, one that shows the significance of mathematics as at once a function and a representative form of human culture. The bearing in question was discerned for the first time only a few years ago by Oswald Spengler, who has signalized it with much repeated emphasis in his truly momentous work, *The Decline of the West*. Briefly stated, it is this: The peculiar type of mathematics found in the mature Culture of a given people is a clew to the essential character of that Culture taken as a whole. To set the idea in clear light it must be disentangled from certain other ideas with which, despite its independence of them, it is enmeshed in Spengler's discourse. And therefore a brief preliminary discussion is necessary.

In Spengler's great work one encounters certain very striking conceptions, assumptions, or theses which, though they are there closely interwoven with the idea above indicated, have nevertheless nothing whatever to do with the question of its own validity. For that reason and despite their own intrinsic interest and importance they are to be entirely excluded from consideration in this essay. One such thesis is that the Culture of a people always comes to birth as a living organism—not figuratively but literally speaking—and that, like any other organism, it grows and develops, arrives at maturity, declines, and dies. Another of the theses is that the existing Culture of the West—the so-called Faustian Culture of Europe and America—has already passed the climax of its development and is now rapidly declining to the doom of destined extinction. A third one of the theses is, in effect, that culture history is a history, not of culture, but of Cultures—the Hindu, the Egyptian, the Classical, the Arabian, and

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others—constituting no continuous stream of development but appearing only as magnificent episodes, loosely scattered over the space-time map of human life, and differing essentially in *kind*.

With these theses, utterly irrelevant to my present purpose, I am not here concerned. The matters with which I am concerned are far less debatable; indeed, once they are rightly understood, they are not debatable at all. Succinctly stated, they are these:

1. In the course of its growth and development every Culture gradually shapes and expresses itself in a variety of cardinal Forms: literature, religion, ethics, architecture, painting, sculpture, music, mathematics, science, philosophy, jurisprudence, and others. That is obvious.

2. Although all such major expression-forms are common to all of the great Cultures in the sense that religion, for example, or philosophy, or architecture is found in all of them, yet each of the forms as seen in one Culture differs profoundly from its kind as seen in another. That, too, is obvious, and is highly significant. To see it one has only to note that the religion or the drama or the science or other expression-form of (say) the Classical Culture differs from its correspondent in the Culture of the West as profoundly as a Greek temple differs from a Gothic cathedral or as Æschylus from Shakespeare or as Thucydides from Gibbon. Not less profoundly does the Classical geometry, well represented by Euclid's *Elements*, differ from that of the West. The former, confining itself to the properties and mutual relations of only *finite* figures, like ordinary familiar triangles, circles, cubes, cylinders, and so on, knows nothing of *infinite* elements, and never dreams of exploring Space as such. (Indeed there is no word for space in Euclid or even in the Greek language.) In the sharpest contrast therewith, Western geometry has infinity for its dominant theme, and, not content with the endless reaches of ordinary space, creates and geometrizes spaces of higher and yet higher dimensionality. No wonder that two such geniuses as Hermann Weyl and the late Henri Poincaré, both of them imbued with the spirit of Faustian Culture, have agreed in saying that "Mathematics is the science of the infinite"—a statement that would have seemed to Euclid or Archimedes to be quite meaningless or absolutely false.

3. Notwithstanding the vast difference between an expression-form as found in one Culture and that form as found in another, all

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of the forms as found in a given Culture are spiritually so congruous with one another, so marked by a family likeness, that they together constitute, like the features of a face or a landscape, a single unitary picture—the *physiognomy* of that Culture. No informed and sensitive intuition can fail to discern the deep congruity of Greek mathematics, Greek science, Greek architecture, Greek religion, Greek drama, and so on, as beheld in the physiognomy of Classical Culture, or fail to discern the like similitude of the mathematics, the science, the architecture, the religion, the drama, and so on, together making up the immensely different physiognomy of the Faustian, or Western, Culture.

4. In virtue of that principle of inner congruity or family likeness, each of the expression-forms of a given Culture essentially bears the image of every other such form, represents it, tells virtually the same tale, revealing in and of itself what is distinctive in that Culture's soul. And therefore, were a Culture completely lost save for a single one of its expression-forms, it would be theoretically possible, and in a measure practically so, to determine from that sole survivor what the lost forms and the total Culture itself were like.

The reader has doubtless perceived that the subject I have been delineating in this section is both big and grave. Further elaboration of it, were there room for that, would but confirm a conclusion already so evident as to require nothing additional save final formulation.

One thing is a *function* of another if the two be so connected that the former changes whenever the latter does. It is obvious that whatever is a function of human culture is laden with human significance. Mathematics, we have seen, is such a function. What are the salient aspects of the functional relationship? As already said, they are these: mathematics is an integral component of each and every one of the great Cultures; the type of mathematics found in one Culture differs from the type of it found in any other, there being as many such types as there are Cultures; mathematics is among the cardinal expression-forms of each and every Culture; like any other one of the major expression-forms of a given Culture, mathematics is a *clew* to the distinctive character of that Culture taken as a whole—a clew to its soul.

Those functional aspects merit and will amply repay prolonged

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meditation upon them. The more they are pondered, the more profound their significance is seen to be. I hardly need add that they are among the ways in which the humanity of mathematics can be made to disclose itself to any one whose mind is open to such considerations.

The humanity of mathematics reveals itself with almost startling brilliance in the fact that mathematics sets before us in perfect light the essential nature of those spiritual phenomena, at once so strange and so familiar, which are everywhere known as *Ideals*.

What is an Ideal? What does the great term properly signify? The question is important. For, as every scholar knows, it is a common fortune of all great terms to acquire a variety of vague, misleading, sometimes incompatible, and frequently false connotations. The term Ideal has not escaped that fate. Since in vulgar usage it has come to signify things that in point of kind are actually separated by an unbridgeable chasm of difference, in the interest of clear thinking one is obliged to say that ideals are of two radically different kinds: the *spurious* and the *genuine*.

What is a genuine ideal? What is a spurious one? And what is the principle discriminating them? The questions can be answered with perfect precision. The necessary and sufficient means thereto are found, as we are to see, in the mathematical notion of Limit, but not elsewhere. It would not be easy to exaggerate either the mathematical and scientific power or the subtle refinements of meaning represented by that little five-letter word. But for the purpose of the present discussion, designed primarily for laymen, a sufficient grasp of the momentous concept can be gained by looking keenly at two or three simple examples of it, so simple indeed that for any scholar to shy away from them would be a bit disgraceful.

Think of a 10-foot line. In thought cut off half of it, then half of the remainder, then half of the new remainder, and so on unceasingly. Let S be the sum of all parts that have been cut off at any stage. S is a variable that grows as the cutting goes on, gets to differ from the length 10 by as little as you please, by less indeed than any prescribed amount however small, but it never reaches 10. Here 10 is the limit of the variable S.

Again, let R be the ratio of $100+x$ to $2+x$. If x changes in value, R changes also; that is, R is a variable. Now let x, starting

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with some definite value, shrink to half the value, then to half the new value, and so on endlessly. R thus gets nearer and nearer, as near as you please, to 50, but never can reach it. Here 50 is the limit of the variable R.

As another example, let C be a given circle. If r be its radius, its area is πr^2, and its circumference is $2\pi r$. Now think of the regular polygons that may be inscribed in C—first a triangle, next a square, then a pentagon, then a hexagon, and so on forever—and *endless* sequence of them. Let A be the area and P be the perimenter of "any one" of the polygons. As we pass in thought along the sequence or succession of polygons from the very beginning of the sequence, both A and P continually increase; A grows more and more nearly equal in value to πr^2, coming to differ from it by less than any preassigned amount however small, but never reaches it; while P similarly approaches, without ever attaining, the value $2\pi r$. In the one case, πr^2 is the limit of the variable A, and in the other, $2\pi r$ is the limit of the variable P.

The reader knows that many variables are limitless. An obvious example is *time* reckoned backward or forward from any chosen date; another is *distance* measured along a Euclidean straight line from any chosen point on the line; a third is the *volume* of a sphere whose radius increases unceasingly at the rate of (say) a mile a minute; and a fourth is the numerical variable N if its law of variation requires it to take on, in the order indicated, the values 1, 2, 3, . . ., in the unending series of integers.

Regarding any variable that *has* a limit, it is essential to note carefully two facts: first, in the endless course of its variation, the variable comes to differ from its limit by less than any prescribed amount however small; second, the variable never reaches its limit—after any stage of approximation there always remains a further course to run.

Such, briefly described and simply exemplified, is the mathematical concept of limit. In it we behold in perfect light the precise pattern to which any ideal, if it be a genuine one, conforms. No matter whether an ideal be one of justice or of injustice, of freedom or of tyranny, of beauty or of ugliness, of happiness or of misery, of wisdom or of folly, of moral good or of moral evil, of power or of impotence, of clarity or of obscurity, of skill or of unskill, of piety or

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of impiety, or of any other distinction, it will be a *genuine* ideal, if and only if, like a mathematical limit, it admits of being approached through an endless sequence of closer and closer approximations, and is, again like a mathematical limit, incapable of being actually attained. It is obvious that many ideals, commonly so called, do not conform to that pattern; they fail to conform to it because they are attainable. All such ideals I describe as *spurious*, not to imply that they are ignoble, for often they are of great worth, but in order to distinguish them sharply from genuine ideals, from which they differ infinitely. I say infinitely because the difference between being attainable and being unattainable, is, quite strictly, an infinite difference. Think of any attainable degree of excellence in no matter what activity or art, and of perfection in the same. Obviously the two are separated by an endless series of intermediate gradations, as are, for example, any given degree of rational plausibility, however high, and flawless reason.

To any one who has clearly seen, as above, precisely what it is in a genuine ideal that makes it such, the following facts cannot fail to be evident:

1. A genuine ideal is not, like a spurious one, a goal, a post that can be reached, but is, as Emerson said, an "ever-flying perfect," not to be overtaken by any pursuit however prolonged, but admitting of an endless series of closer and closer approximations.

2. Neither does a genuine ideal, as many seem to think, essentially signify something having *moral* perfection, something infinitely desirable but desirable solely or mainly on grounds of ethical worth. On the contrary, the idea of an ideal evil no more involves an internal contradiction than does that of an ideal good. Evidently a specific ideal may be infernal or supernal, satanic or divine, or something between such poles.

3. Nor does a genuine ideal denote or connote, as many have thought, something visionary, hazy, merely utopian, wildly or sentimentally romantic, unreal, without significance or worth in a workaday world. Very far from that, genuine ideals are not what would be left if that which is hard in reality were taken away; they are themselves, in the realm of mind, to which they belong, the very flint of reality—hard, cold, logical, austere.

Had the mathematical concept of limit been known in the days

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of Plato, the great thinker's shining Absolutes—absolute justice, absolute beauty, absolute truth, absolute good—whose "perception by pure intelligence" brings us, said he, "to the *end* of the intellectual world," would not have appeared to him as "ends," or final terms, of any sequences or progressions within the intellectual world, but rather as limits, or ideals, above and beyond it, as downward-looking aspects of an over-world.

The rôle of ideals in the life of mankind is too vast a subject for treatment here. Suffice it, in this connection, to say two things, of which one is this: That every art of men, every sort of human activity, however common or rare, humble or high, begets in the minds of those devoted to it some vision of the possibility of reaching in it higher and higher degrees of excellence, culminating in an appropriate dream of perfection, which, though not attainable, admits of an unending sequence of approximations thereto; so that ideals are not the peculiar fortune or the special prerogative of a few elect men and women, but, in one way or another, now consciously and now unconsciously, constantly figure and function in the lives of all.

The second thing to be said is that, because genuine ideals cannot be realized, a certain philosophy, now in much vogue, condemns them and counsels us to eschew them, on the alleged ground that, because they are unattainable, they dishearten, depress, and devitalize. But that philosophy lacks *vision* and *wing*. It is the philosophy of a burrowing mole guided solely by the immediate pressure of the soil upon its nose. It does not perceive that among genuine ideals, the nobler ones, far from depressing, are as "angels of progress leaning from the far horizon, beckoning man onward and upward forever." It does not perceive that it is the lure and the light of such unattainables that have made possible the great triumphs of the human spirit in every zone of life.

Let us pass from the highly abstract and general to something more concrete and particular. From a consideration of the mathematical revelation of that which, because it is essential to each of them, is common to all genuine ideals, I now turn to the bearings of mathematics upon certain grave ideals of a specific kind.

Genuine ideals are shining things—stars, so to say, in a psychic sky —and, like the physical stars, they differ in glory. They differ, too,

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almost or quite immeasurably, in respect of complexity. A perfectly simple ideal, if the thing exists, would be hard to identify as such.

Obviously the ideal of human education is at once among the highest and among the most complex, involving in its composition innumerable ideals which, though perfectly genuine themselves, are yet, in comparison with the other, subordinate and auxiliary; for the ideal of human education may be characterized by its aim, and its aim is nothing less than that of qualifying men and women to realize in fullest measure, and to represent worthily, in their lives, their personalities, and their work, the potential dignity of Man.

Because human education contemplates human beings in their full integrity as humans and not as mere followers of specialized human pursuits, it demands discipline and orientation of our human faculties in their relation to all the great enduring massive facts of life and the world. How can such discipline and orientation be achieved—not perfectly, of course, for that is impossible, but more and more approximately? There is one and only one way—through progressive cooperation of the mighty disciplines—history, philosophy, physical science, social science, religion, esthetics or art, and the rest.

Now consider what it is that, in ultimate analysis, each and every one of the great disciplines deals with, not indeed exclusively but mainly. It is mainly with Ideas that they deal. Ideas own a genuine kind of reality peculiar to themselves; they have a being and character of their own; they are mental things, and their ways are not ways of matter but ways of mind. To deal successfully with ideas as ideas it is necessary to deal with them in accordance with what it has long been happily customary to call "the laws of thought." And the long-established fame of mathematics rests upon the practice of dealing with ideas in conformity with the laws of thought. Logical rectitude is itself an ideal of immense human significance and worth. In nearness of approach thereto mathematics has far outstripped every other intellectual enterprise—a fact disputed by none. In respect, then, of logical rectitude, mathematics is a well-nigh perfect model, or exemplar, for all other educational disciplines in so far as these have, ultimately, for their main concern, the handling of ideas as such. Thus it is evident that the bearing of mathematics upon the ideal of human education is the bearing of one great ideal upon another.

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But, in view of the fact that the ideas with which most of the major disciplines are obliged to deal have not attained sufficient precision to admit of logically rigorous handling, must it not be said that the standard of logical rectitude is of very limited availability? The right response is an emphatic negative. Certainly it requires no extraordinary acumen to see that the truth is this: No matter how remote, or seemingly remote, a given field of ideas may be from that of mathematics or that of mathematical applications, just in so far as our thinking in the given field departs from the standard of logical rectitude, our discourse sinks down towards the level of prehuman or subhuman chattering.

Perhaps no other bearing of mathematics is more helpful than its clear revelation of what is most distinctive in the nature of our human kind. For such a revelation we have long been schooled to look to the so-called humanities, which have been commonly spoken of as if mathematics (and science, too) were alien to them. The foregoing considerations seem to indicate that, on the contrary, mathematics is itself one of the great humanities, and the evidence will grow. What is the test? None, I believe, will deny it to be this: Those subjects or enterprises are best entitled to rank among the humanities which (*a*) disclose most clearly the most significant defining mark of man as man, and (*b*) best serve to guard and guide human life. Let the two parts of the double criterion be applied severally.

What is it that most significantly distinguishes the race of man from that of animals? The answer is found, I think, in what Count Alfred Korzybski a few years ago happily called the *time-binding* capacity of man. The time-binding power is that highly composite innate human endowment which enables each human generation to employ its inheritance of the accumulated achievements of all preceding generations as *living capital* for the achieving of yet greater and greater things. Without that inborn endowment humans might, perhaps, have initiated what we call civilization, but they certainly could not have advanced it.

The power in question is more or less discernible in the development of every great subject, but, and this is the decisive consideration, mathematics is the only subject in whose history the thing presents itself at every stage and in *stark nakedness*. That surpassing rev-

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elation of what it is that most significantly sets man apart from, and immeasurably above, all such artful creatures as the fox, the beaver, or the bee, strongly supports the claim of mathematics to membership in the assembly of the humanities.

This conclusion is confirmed by a glance at mathematics regarded as a guardian and guide. Native to man are a propensity and a power for *idealization*. In virtue of that dowry there hovers above each cardinal type of human activity a corresponding ideal of excellence, serving as a kind of muse to beckon and woo us upward along the endless steep towards perfection. One of the great types is that of logical thinking. Its muse, the muse of mathematics, is Logical Rigor, an austere goddess, demanding, though never quite securing, absolute precision; demanding, though never quite securing, absolute clearness; demanding, though never quite securing, absolute cogency.

But mathematics is far from being the goddess's sole care. Her authority, as before pointed out, extends to all provinces of thought as thought. In her empire the distinction of mathematics is only that of an exemplary agent, operating as a model, guardian, and guide.

What has been said touching the humanity, as disclosed by the bearings, of mathematics is hardly more than a suggestive beginning of what might be said. A full discussion would expand to the proportions of a large volume, for not one among the universal interests of mankind could be excluded from the purview of such a work. The reader is invited to join in glancing quickly at an additional series of prime concerns.

1. *Relations* pervade our human life in all its dimensions, for not only are relations of one or another kind denoted, directly or indirectly, explicitly or implicitly, by a great majority of the words in any language; but there are countless hosts of nameless relations, since, as it is reasonable to assume, every thing in the world has named or unnamed relations to all other things. As an object of possible knowledge or as a field of research, the universe is a boundless locus of relations, for, as the late Henri Poincaré used to say, science cannot know "things" but only "relations." *Being* itself, said Lotze, consists in relations. Relations seem to be both infinitely numerous and infinitely diversified, and they are literally omnipresent. Relations are used by everybody all the time. For these many reasons, the

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understanding of relations, the gaining of relation-knowledge, is a matter of necessary, perpetual, and universal interest and concern.

The bearing of mathematics thereupon is twofold: It is a certain unique relation—called logical implication—that has rendered possible the very existence of mathematics; and second, the understanding of relations is precisely what mathematics, at first unconsciously, at last consciously, has been pursuing from time immemorial.

And just because the relations investigated by mathematics are *abstract* while those conditioning life in our concrete world are *concrete*, the bearing in question is effective; for, as Professor A. N. Whitehead has said, "The utmost abstractions are the true weapons with which to control our thought of concrete fact."

2. *Change* is a second prime concern. Of things found out by humans, many are discovered by only a few, but some are discovered by all, and of these, one is the stupendous fact of change—fertile mother of all phenomena—creator of all our problems, concrete and abstract.

Were all the processes of change chaotic, or lawless, no problems could be solved. That all changes whatever, including those of very minute submicroscopic individual elements, conform to precise laws, the present state of science enables no one to affirm. But speaking macrocosmically—having reference, that is, not to individual elements themselves, but to masses or bodies or systems of them—it is possible to say with confidence that the changes which *they* undergo are *lawful*. To deal successfully with lawful changes it is necessary to know their laws; and to afford such knowledge is the characteristic aim of science. For the pursuit of that aim, mathematical applications furnish science with an indispensable *pattern*. For such applications always essentially involve the study of *functions*, and the study of functions is just the study of the ways in which changes in one or more variable things beget changes in related things. It is true that in the mathematical theory of functions the changes investigated are always highly ideal and abstract. But that is the reason why, as before said, they are so nearly perfect as patterns for the investigations of concrete change in the concrete world.

3. *Invariance* belongs in this series. Permanence and change are the poles of the world, but the idea of invariance is the idea of permanence-in-the-midst-of-change. In the realm of ideas that idea

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is sovereign. Is it only a dream, or is it realized in the universe of concrete fact? To find it so realized has ever been at once the supreme desire and the supreme striving of men. In that sense, "The Quest of Man for Abiding Reality" is the greatest of themes. Will it at some time be worthily handled? The task evidently demands a critical evaluation of all the great enterprises of the human spirit, and whoever undertakes it will need to have the genius and the universal attainments of a Leibnitz; for science, mathematics, art, philosophy, jurisprudence, ethics, theology, and religion, however much they have differed in their methods and their findings, are but diverse forms of *one* emprise—that of our human search for things everlasting, for realities that keep their integrity amid all the mutations of the world.

What is here the bearing of mathematics? In a chapter of his charming little book, *The Queen of the Sciences*, Professor Bell has delightfully sketched for laymen the development of a certain doctrine that, starting as an acorn, has attained, in recent generations, the proportions of a giant oak. That doctrine is the mathematical Theory of Invariance, wherein one is permitted to behold innumerable things —properties, relations, forms, configurations—that remain quite unaltered despite the storm and stress of literally infinite hosts of transformations. And thus it appears that the bearing in question is, in both content and manner, that of a luminous archetype or pattern.

4. *Infinity* is a fourth prime concern. In a poignantly beautiful letter recently written, at the age of ninety-one, by Oliver Wendell Holmes, great jurist and great man, are found these words: "Life seems to me like a Japanese picture which our imagination does not allow to end with the margin. We aim at the infinite." We do aim at the infinite in manifold ways—in our endless conceptual extensions of time and of space; in our arts of commemoration; in our searchings for eternal verities and goods everlasting; in our hopes and dreams of immortality; in the boundless soarings of "bodiless music"; in the limitless recessions of background in many a great picture; in our outreachings and inreachings for Deity; in the "God-feeling" expressed and evoked alike by the interior and by the exterior of a "Faustian Cathedral." Professor David Hilbert, a world-famous mathematician, has recently said: "The infinite. No other great question has ever moved the spirit of man so powerfully, no

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other has stimulated his intellect so fruitfully." Under one or another of its many forms the idea of infinity has significantly figured both in scientific thought and in philosophical speculation, East and West, from remote antiquity.

In modern mathematics and not elsewhere that momentous concept has at length attained precision. Very recently, as before noted, Hermann Weyl, eminent mathematician, physicist, and philosopher, has written in italics that "*Mathematics is the science of the infinite.*" For the most part mathematics has dealt and deals with infinity only implicitly but there is a large mathematical literature dealing with it explicitly. It contains many things to astonish and to edify, but no answer to the question: If a man die, shall he live again? Yet in that literature one may find much-needed help in trying to discover what it is, intellectually, that the idea of immortality essentially involves. And that should seem a precious service to all those who, once they have made their yearnings articulate, ardently desire to ascertain what their words really mean.

5. *Religion*, finally, belongs in this series of prime concerns. Regarding the bearings of mathematics upon religion I may refer to Professor David Eugene Smith's recent address on *Religio Mathematici* as affording a helpful clew. Because of its sheer ideality Plato's great concept of a world of ideas transcending the world of sense has been specially congenial to the temper and habit of mathematical minds. Perhaps the concept originated in mathematics. At all events, shortly after its rise, it was both much clarified and greatly reinforced by Euclid's *Elements*, for this soundest of all the works that have come down to us from antiquity deals with *pure* ideas and not with objects in the world of sight and touch. In such thought many have found a deep source of religious consolation for, because sheer ideas are wholly unaffected by temporal vicissitudes, one feels, in contemplating them, that one is literally in touch with things eternal.

Theology, too, has been thereby deepened and fortified. One recalls that Pythagoras, for whom the essence of the cosmos is Number, was the founder of a religion in which mathematics was held as sacred; and that Nicolaus Cusanus (1401–1464), Bishop of Brixen, who, in the competent judgment of Professor Weyl, "was one of the epoch-making minds in both Theology and Mathematics," held that

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the only way to an understanding of the divine is the symbolic way of mathematics. For Cusanus, as for Spinoza, the true love of God was an intellectual love.

Obviously the series of topics that have now been briefly discussed could be readily extended to include others of hardly less importance —such, for example, as the bearings of mathematics upon the art of logical criticism, upon psychology, upon metaphysics, upon expository style, upon the nature and limits of pragmatism, upon crises in the development of methodology. It is not less evident that the foregoing discussions could, without exhausting their several themes, be so expanded as to make up a large volume. I believe, however, that what has been said is sufficient, for all those whose minds are not closed against the kind of considerations adduced, to vindicate the claim of mathematics to rank second to none among the prime humanities.

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"God's Country"

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MOST of us can recall the happy days of our childhood, when life was simple but very serious, and spontaneous loyalties left no place for hesitation. No cause was too small or too great for our allegiance. We warred valiantly for our side in word as well as deed, serenely confident that we alone were right and that all conflicting persons or points of view deserved no quarter. In matters national and patriotic we doubted not that our country could "lick the world," and this seemed fortunate because other countries, unlike our own, were not above wrong-doing and needed to be licked occasionally.

In our early schooldays we were made aware that our blessed national preeminence was due in large part to God's stubborn predilection for the United States of America; in part also to the superhuman virtue and prowess of George Washington and his associates. The Pilgrim Fathers had played some rôle that we did not fully understand, but apparently their addiction to church-going had somehow attracted God's attention and benevolence toward New England and adjacent regions. Much later Abraham Lincoln had appeared on the scene, wearing a shawl and a tall hat, and had freed the slaves, long before any other nation had even thought of doing such a noble deed, and thereby filled the black race in America full of everlasting gratitude toward the white. Likewise Mexico and the other heathen nations southward to Cape Horn were, or ought to be, full of gratitude for our Monroe Doctrine by which we said to the ravening wolves of European imperialism, "You shall not pass." This Pan-American gratitude to Uncle Sam expressed itself in oceans of oil and billions of bananas, loving gifts from our loyal little neighbor nations.

As for our more remote neighbors, across the ocean, in all fairness we were forced to admit that they were a bad lot; more to be pitied

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than blamed perhaps, but certainly deserving to be eyed with distrust and politely concealed but contemptuous amusement. Only one of them knew how to speak English; most of them had never even heard of baseball. They were oppressed by despotic kings, dominated by effete and bemonocled nobilities, menaced by bomb-tossing anarchists. Small wonder that such of their citizens as could raise the money for a steerage ticket clamored for admission through Ellis Island to the land behind the Statue of Liberty.

Even in our schooldays, some of us, in rare flashes of imaginative insight, vaguely wondered how these foreigners avoided feeling ashamed of themselves and their country, at least after they had once heard of ours; and our conclusion usually was that this very consciousness of inferiority was what spurred them toward migration to our exalted U. S. A. As we imbibed from our schoolbooks and our teachers large doses of patriotic pride we sometimes felt a mild curiosity, mingled with a condescending pity, concerning the hard fate of school boys and girls who were trying to imbibe patriotism in foreign lands. What a mixture of hypocrisy and humiliation the process must be by which the faults and failures of these less favored countries were concealed and their meager excellences magnified, in order that the little citizens could be made to feel even a shabby minimum of admiration and pride concerning their obviously third or fourth-rate native land.

We were totally unaware then of the miracles which can be performed with any set of facts by pedagogy and patriotism. Subject to a few exceptions it seems that patriotism does not need facts for its support, and that the nations most puffed up with patriotic pride are those who have least reason to be thus inflated. Anyone who thinks the sentiment "There's no place like home" has been outmoded, can be quickly proved wrong out of the primers of patriotism in use throughout the world. Every country, however shabby or decadent it may seem to outsiders, is easily accepted by its schoolchildren as "God's country"; the implication being that other countries have less of the divine favor and that enemy states can find favor only with the Devil. Anybody who shares the Scot's wish

> O wad some power the giftie gie us
> To see oursels as ithers see us!

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and to learn, moreover, how others see themselves, as nationalists and patriots, need only read the schoolbooks of the nations, wherein their children and citizens learn of the matchless glories which make each land preeminent above all others, and its heroes splendid beyond any comparison.

Who ever heard of Georges Scanderbeg? Yet every schoolchild of Albania (wherever that may be) knows him as the greatest warrior that ever lived. They rejoice in his memory because he specialized in the elimination of their pet enemies, the Turks; but he was great in so many other respects too that they have to range the field of history to find other heroes as a basis of comparison. He was as "chaste as St. Louis, diplomatic as Talleyrand, and brave as Alexander." Our George Washington ranks as far below him as chopping down cherry trees ranks below chopping down Turks, in Albania.

It may come as a bit of a shock to find how often our Washington is outranked, in foreign histories. According to a textbook used in the Argentine Republic, one of their heroes eclipses him quite. "In genius, in splendid generosity, in all those brilliant attributes that give national distinction to those few favorites who are destined for immortality, he was superior to Washington," this textbook says. Of course we must not overlook the compliment in the selection of Washington as the standard of measurement, nor the fact that Argentina is a most remarkable country, in its own schoolbooks. "The Argentine nation was never conquered," they tell us. "Argentina is loved and respected by all people of America and by all people in the world. Argentines are everywhere respected for their culture, wealth, and universal reputation for love of justice. Her political relations, progress, and defence have placed her in an enviable position above all other Latin American countries." Argentina's claim to be "God's country" might seem hard to beat since she specializes in virtue and has always been victorious. How proud and happy must her children be when they learn that, "The Argentine Republic has always held and stood for justice. She has never provoked wars or conflicts with other nations. . . . She has worked always for justice and right in all she has done. Always she is just. Always she is the victor, presenting herself to history and to other peoples of the earth as the living image of the Victory of the Right."

Across the mountains, in Chile, are bred valiant warriors, at whom,

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in Chilean schoolbooks, the whole world trembles in admiration. "We know the soldiers of Chile; we know that they are of the mighty Chilean race that knows no fear or fatigue; we know that they possess those great virtues that make up a great people." In one historic battle a Chilean general "defied death a million times" during an attack "where the Chilean soldiers terrified the world." Of another South American engagement it is said that "Chileans may feel proud in calling it the greatest battle in history"—and this was written since the World War.

Concerning that World War, by the way, it is interesting to learn that it was really won at last by Italy. The Italian schoolbook story of the matter relates that "Despite the arrival of vast numbers of Americans in France, the end of the War did not seem possible in 1918. Again it was Italy who turned the tide (and this time decisively) of the War. October 24 the entire Italian army charged for the final blow, and in a furious battle of eleven days finally clutched Austria's throat and beat her into a lifeless mass. . . . Only Italy of all the nations engaged in the War had the satisfaction and pride of winning the field with sword in hand." However surprising this statement may seem to the patriots of other lands, it merely reminds the loyal Italian of "the glory that was Rome," somewhat less than two thousand years ago. As the school texts put it, "Every Italian recalling our glorious history, which has no equal, must believe that our Fatherland has a still higher destiny to be preeminent and splendid in everything, and must passionately wish to contribute with all his force of heart, mind, and body to the grandeur of our common Mother, so beautiful and so noble. . . . There have been great men everywhere, in France, in England, in Germany, all over Europe, as well as in America and Asia. But fortune has particularly smiled on Italy, for she seems to have inherited from Ancient Rome the mission of teaching beauty, law, and science to other peoples." In so far as Italy is dominated by Fascism, it has peculiar reasons for considering itself "God's country"; reasons which are more than suggested in the following extract from an Italian schoolbook: "As the Catholic must have a blind belief in the Catholic faith and obey the Catholic Church blindly, so the perfect Fascist must believe absolutely in the principles of Fascism and obey the hierarchical heads to whom he owes allegiance without reserve. Religious dogmas are not discussed, because

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they are truths revealed by God. Fascist principles are not discussed, because they come from the mind of a genius: Benito Mussolini . . . ."

Across the Adriatic from the land of Mussolini we find the various "God's countries" peculiarly outspoken about the diabolical character of each other, with splendid disregard of their respective Christian or Mohammedan affiliations. Thus while Greece vilifies Turkey from force of long habit, her rancor is nevertheless largely reminiscent and waning; but whenever she mentions the unspeakable Bulgarians her wrathful denunciation is forward-looking and cumulative. A Greek schoolbook inoculates the infant mind thus: "My child, never trust a Bulgarian. They do not fight for liberty and honor, but in order to see blood flow, to rob corpses, to martyrize human bodies. They are ferocious beings; not certainly noble lions, but savage and perfidious beasts. . . . We are struggling to protect the civilized world against the invasion of these monsters; we are warring against Bulgarians for the good of humanity."

To this soft impeachment a reply is contained in the Bulgarian schoolbooks. Says one: "The Greek is a great hypocrite. He becomes excited easily and then is resolute, but soon his enthusiasm wanes. He is never capable of maintaining a sincere friendship with one of another nationality. The Greek is fanatical and patriotic. If he lacks power he will resort to strategy, deception, lies, to anything in fact provided only it achieves his purpose. He is astute. When he is weak, he prays to you on his knees; when he is strong he is cruel. An historical example; the Greeks put out the eyes of 15,000 Bulgarian prisoners of war in the time of the Czar Samuel."

Turning from countries so un-Anglo-Saxon as all these just mentioned, we find nevertheless the "God's country" complex almost equally rampant. Just what else do those lines signify, in the British anthem?

> Confound their politics,
> Frustrate their knavish tricks.
> In Thee our trust we fix.

And how touching are the myriads of little patriotic poems, such as:

> Every lad in this dear land
> Holds a treasure in his hand,—
> Worth his living, worth his dying,

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Worth the whole wide world for buying.
Something no one can impart,—
You must feel it in your heart,
Past all spoken words or written,
Simply—"I belong to Britain."

One wonders whether "Every lad in this dear land" is meant to include de Valera of Ireland and Gandhi of India.

In like manner one may be permitted to suppose that

My country, 'tis of thee,
Sweet land of liberty,

is sung with certain reservations in Cuba and the Philippines, and that the lines

Our fathers' God, to Thee,
Author of liberty,

may raise some question as to whether God, like the Constitution, follows the Flag only in so far as the Supreme Court indicates.

In all seriousness, however, the "God's country" idea is a major menace to world peace and justice, and there is urgent need, as a preliminary to world disarmament, that God be de-nationalized. The essentially juvenile, not to say imbecilic, notion that the Creator and Upholder of the Universe plays favorites in our petty nationalistic brawls, has long been and still is a powerful aid toward chaos and calamity. It is high time that intelligent patriots and humanitarians joined in laughing it out of existence. Thus would a long step be taken toward deflating irrational and provocative patriotisms throughout the world.

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Artistic Engineering

CHARLES EVAN FOWLER
Consulting Civil Engineer

DURING the past few years the trend of engineering towards artistic designs lends great hope for an eventual full recovery from materialism in construction. For much more than a generation we have witnessed an almost servile worship of utilitarianism, to such an extent, in fact, that whatever type of structure would probably bring the largest financial return has been considered the most proper to build, no matter how repulsive it might be in appearance. This curse has left its mark not only in America but in every country of the globe. Everywhere landscapes are dotted over with horrid looking bridges, power towers, water tanks, dams, and even buildings whose forms the engineer has been allowed to have a hand in shaping. More than a generation ago the writer undertook to introduce more pleasing designs for bridges of all classes, but, usually because of lack of funds, the beautification was largely confined to pleasing outlines which added nothing to the cost, although in many cases it was possible greatly to improve the sightliness of the details as well as their harmony with the structure and its surroundings. Although some college professors protested that they were teaching engineering and not art, nevertheless through an incessant crusade in the form of articles, books, and lectures to students and engineers, the cause has been greatly furthered. Almost all engineers now seem to realize that primarily our universities must turn out understanding human beings with some possibilities of really enjoying existence.

Real literature, melodious music, and the beautiful in art have been potent factors in the advancement of our civilization; and when nations have not fostered the arts, materialism has become so rampant that those nations have eventually succumbed to a more virile people with more altruistic and artistic ideals. Just how much further we can retrogress without calamitous results no one can surely predict, but it

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is to be hoped that the return to higher ideals will be so rapid as completely to cure our present too patent ills, and that an avoidance of bizarre structures will materially aid the suppression of many of the evils of a jazz age. Since our engineering structures are almost always the most prominent objects in any landscape, the world over, a gradual improvement in their artistic character would inevitably have a very salutary effect.

In the past, cycles in the evolution of engineering design have been to a large extent local in character, since, because communication from one part of the world to another was dependent upon the slowest kind of land travel, there was little chance for a wide dissemination of artistic ideas. With the first small ships, however, the civilized world widened its boundaries, while today the whole world has become an arena for the engineer.

The oldest record of a span making any pretensions to artistry of design is that of a Babylonian arch of mud bricks, built in 4000 B. C. The stone arch bridges of China undoubtedly antedate the Christian era by hundreds or possibly thousands of years, while in the white marble, camel-back bridge in the Imperial Palace grounds at Pekin the very striking stone bridges of the Chinese, rising high to allow of the passage of boats beneath, reached a perfection of beauty. The graceful reverse curves of the footway over the high arch have a counterpart in the scientifically graceful curves of the great Hell Gate steel arch bridge at New York City. The bridges of Japan are likewise, many of them, graceful arches, and the noted Spectacle bridge with its two arches of complete circles is one of the most notable bridges of the Orient. Grapevines evidently suggested the principle underlying the first suspension bridges, but in the Orient such structures, built of bamboo, are angular in form and without the inherent grace of modern suspension bridges, a grace made possible only when iron and steel in the form of bars and wires became available. Although the brick arch of Babylon was not a graceful one it nevertheless showed rudimentary signs of a more artistic method of construction than the flat lintel of stone, the stone rafters, or the small stone slab bridges of the Egyptians. Undoubtedly nature taught men, through the grace of waving palm leaves, to build the pointed arches of Persia, like those of the stone bridge at Dizful, and those of the long stone bridge at Shuster over the river Karun. Undoubtedly, too,

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the old pointed arch bridges of Persia were the prototypes of the Gothic styles of the Middle Ages.

The first great development of artistry in bridges occurred in the far flung Roman Empire during the third great cycle. Undoubtedly the Romans brought the idea of the stone arch from the Orient, but they developed it in an amazing manner, and stone arch bridges of real artistic merit were constructed throughout the Empire from Spain and Gaul to the remotest parts of the Near East. Many of them remain to this day, and the bridge of Augustus at Rimini, of five stone arches, is still in a good state of preservation, although the decoration, classic columns with entablatures over the piers, is not in harmony with present ideas of appropriate decoration. One of the greatest of the Roman bridges was the Pont du Gard at Nimes, France, with a roadway on the larger stone arches over the river, while the second and third stories of arches carried the old aqueduct, the whole forming a structure of most pleasing and artistic appearance, although the design is not by any means perfect. Many of the Roman stone bridges were arches of short span and of somewhat crude construction, but numbers of them, of which the bridge at St. Chamas was one, were rendered monumental and artistic by the imposing triumphal arches over each end of the roadway, with classic columns as part of the imposing and beautiful portals. Many others of the Roman spans were of great length for this early period, that at Trezzo over the river Adda having had a span of 251 feet, as determined from the portions of the arch remaining on either bank. In fact the Romans, after adopting the idea of the stone arch, so developed and improved it that their ideas were used by the Brothers of the Bridge in building stone arch bridges all over Europe during the Middle Ages. The bridge at Avignon, France, was one of the most notable of these. Half of it still remains as a spectacular monument of the work of the Brothers, with its half center arch projecting outward over the center of the stream. The famed old London bridge with its superimposed houses was another one, built in 1176; and while according to the old song it was always "falling down," at the last it had to be torn down to make way for the noted one built by Rennie. The monumental Pont Neuf in Paris, begun in 1578 by Ducerceau but not completed until the reign of Henri IV, was originally a narrow structure, later widened to carry more traffic. In this process of reconstruction its appearance was so

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much improved that it still compares favorably with the many other very artistic stone bridges over the Seine. The Bridge of the Trinity at Florence, Italy, designed by Ammanati in 1750, is much more pretentious artistically than any of the foregoing, but in spite of its fine moldings and chaste embellishments, its appearance is much marred by the two heavy abutment piers in the river, constructed to carry the thrust of the three very graceful elliptical arch spans. Had the two slender shore abutments been made thicker to resist the thrust, and the river piers been made thinner accordingly, the bridge would have formed a quite perfect piece of bridge architecture.

The study of existing bridges leads to the fundamental conclusion that the perfectly designed bridge must have simplicity, symmetry, harmony, and proportion. To be truly artistic any structure must have an odd number of spans, at least up to seven in number. Since the eye cannot take in more than seven spans in one view, the number, beyond this point, is not important. The basic principle of simplicity is usually provided for in any design having the proper scientific proportions, and the curves of the arch and of the suspension bridge are basically beautiful. By making one-half of the bridge from the center identical with the other half the principle of symmetry is usually provided for, although an asymmetrical bridge can be rendered pleasing by proper treatment. The principal proportions as scientifically determined to be necessary are usually artistic, but all details and all decorations must be in proportion to those of the spans themselves. These basic principles may be compared to the basic principles of architecture—sincerity, propriety, style, and scale. Sincerity is much the same as simplicity, but it may be carried too far, and thus cause an unpleasing structure; because straight lines and unpleasing angles, however sincere, are not in themselves beautiful. Propriety, since it calls for a truth-telling structure in harmony with its surroundings, is comparable to symmetry and harmony. Style cannot as yet be considered in relation to engineering architecture, except as it may relate to engineering buildings. While an arch bridge might be termed Romanesque, or the Brooklyn bridge towers referred to as Gothic, in the strictest sense this would be improper, and we can only hope that in time it will be possible to give a scientific classification for engineering styles.

Stone or concrete arch bridges are fundamentally artistic, due to

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the curved line of the arch itself, which is usually a semicircle, the segment of a circle, or an ellipse. The use of columns as decorations has already been referred to in the case of the old Roman bridge at Rimini, where they were employed as bizarre decorations over the piers. The same type of decoration was also used over the piers of the Waterloo bridge in London. Because of this, and also because its balustrades are architecturally correct, the bridge is considered by some writers to be a real work of architecture. Decoration over the piers may properly consist of simple artistic capping and plain or ornamental pilasters or counterforts. These would not violate the canons of appropriateness, whereas columns do. The bridge of Jena, one of the Napoleonic structures over the Seine at Paris, is very appropriately decorated by pleasing statuary at the ends of the balustrades on either shore and by enormous imperial eagles in relief above the piers. Others of the Napoleonic bridges carry great N's in wreaths above the piers. The Grosvenor bridge near the Derby race track in England has a great stone span of two hundred feet, but by the use of paneling on the faces of the abutments and for decoration of the spandrel walls above the arch rings, the bridge has been dwarfed in apparent size. While such decorations are not appropriate for such a large span, they have been satisfactorily employed on spans of seventy-five feet or less, where they do not violate the basic principles of harmony and proportion. The face walls of the great stone arch should be left entirely plain or the decoration confined to some appropriate form of ornamental bonding for the masonry. In cases where the arch bridge is built not of solid walls above the arch rings, but of concrete masonry, spandrel columns and arches are usually employed to support the roadway, thereby very greatly enhancing the artistic appearance of the structure. To be most pleasing there should be an odd, not an even, number of such openings in each half of an arch. From the foregoing it is evident that, to appear most pleasing and artistic, the most monumental type of bridge, the masonry arch, must depend largely upon chaste and appropriate detailing. In designing the parapets or railings the same simplicity must be observed. Even such secondary features as lamp columns or pylons must be in complete harmony with the general design, as well as with other details.

The use of high alloy steel has made possible the design and construction of very long steel arch spans; and whereas only a few years

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ago Hell Gate bridge with a span of 1,000 feet was the longest arch span in the world, we now have the Sydney, Australia, arch with a span of 1,650 feet and the Kill van Kull arch at New York City with a span of 1,675 feet. The writer recently designed an arch with a span of 1,650 feet and another with a span of 1,850 feet, both of the Fidler type of trussing. The comparative design made by Max Am Ende of England only a few years ago for an arch with a span of 2,850 feet, planned for the Hudson River at New York, presents even greater possibilities for very long span arch bridges. The Hell Gate arch, in ensemble the most pleasing and artistic arch bridge in the world, is a half through span, with graceful reverse curves in the top chords meeting the great masonry arch towers, themselves harmoniously designed. So far as outline is concerned the Sydney bridge is only a copy of the Hell Gate bridge, but the towers are of medieval design. They are, however, very artistic and harmonious. The Kill van Kull arch bridge on the other hand, while pleasing in outline, is constructed upon a strictly utilitarian design with the abutment masonry stopping at the roadway level. Some type of towers, of course, may be added at a later date with a view to making this great span almost as artistic as the Hell Gate bridge or the great arch of nearly the same length at Sydney.

The suspension bridge is intrinsically as beautiful as the arch bridge. Due to the weight of the floor and the loads it has to carry the graceful catenary curve of the grapevine span is modified in the case of the bridge cable into a parabolic curve. Although it closely approximates the segment of a circle, this curve is very graceful and pleasing to the eye. The principal artistic effect possible, other than the graceful curve of the cables, must be attained by a careful monumental designing of the towers. The stone towers of the Tierney Clark Buda Pesth suspension bridge are of Romanesque design, and with their careful detailing are very pleasing and artistic, although somewhat heavy in appearance for such a moderate length of span. The stone towers of the Roebling Brooklyn bridge over East River at New York City are most appropriate to the great span of 1,595.5 feet, and the great Gothic arched portals are most artistic. Had the attic stories been added above the cable saddles, as originally planned, the whole design would have been completely satisfying. With the necessity, however, of carrying very long spans and very heavy loads, the era of stone towers has passed so completely that steel towers are now almost uni-

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versally employed. The new bridge over the Hudson River at 178th Street has steel towers of very chaste design, with great arched portals. To simulate stone towers, it was intended to encase the steel in granite slabs, but happily, for economic reasons, the stone facing was omitted. The only thing needed to make the towers artistically very good is the addition of parapets or chaste crestings. The decorative features of the Manhattan bridge over East River at New York were designed by a firm of noted architects, who, while they did not entirely grasp the scientific fundamentals, produced a result esthetically very satisfying. The great fault of the design lay in the use of finials too short for proper harmony and proportion in view of the great height of the steel towers. Since neither architects nor engineers with artistic training were employed in the construction of the Williamsburg bridge, which has a span of 1,600 feet, it is entirely lacking in artistic features. The writer believes that when engineers have been given a proper modicum of artistic training they can design the artistic features of a bridge much better than any other agency, whether the span be long or short; because, to make a structure of proper proportions and real harmony, scientific design and artistic features must be carefully coordinated throughout the entire work of designing the structure.

The artistic possibilities of other types of steel bridges do not in any degree compare with those for arches or suspension bridges; but in fixed span trusses the use of graceful curves instead of broken lines for the outline of the top chord makes such trusses to some extent artistic. As a rule cantilever bridges, with their broken line chords, have been quite repulsive. In the case of the great span of 1,800 feet at Quebec, finials over the towers and pylons at the ends would to some extent overcome the present bizarre effect. In the hugeness of its two great spans of 1,710 feet the great Forth Bridge near Edinburgh, Scotland, is majestic; but the curved bottom chords do not serve to make it even reasonably artistic. The Knoxville arched cantilever bridge over the Tennessee River is entirely satisfactory artistically, and fulfills all the requirements laid down by the principles already stated. The appearance presented is that of five arched spans, with two half arches for the shore anchor arms. Except that the piers were not artistically capped in accordance with the original design, everything was finished in a chaste manner.

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The continuous bridge is a species of cantilever, and the old Lachine bridge in Canada, built by Shaler Smith, was most graceful, due to the curve used in passing from the deck spans to the through spans. Even though it has only two spans the Sciotoville bridge of Lindenthal is of very pleasing design, but it could have been much improved had curved lines rather than a broken outline over the center been employed for the outline of the top chord. The design is, however, symmetrical and harmonious.

The principles of artistic design which have just been stated have not been applied to any great extent to other kinds of engineering structures, although they are applicable, and undoubtedly should be applied, to all classes of construction, whether one thinks of the general design, or specifically of details and decorations. In the steel towers that obtrude themselves upon our sight in almost every part of the country some most bizarre effects are revealed. The towers carrying electric power wires have been designed wholly from the utilitarian standpoint. The use of vertical curves for the columns would make them appear more graceful and beautiful, while without adding much to the cost of the towers, graceful curves could likewise be used for the brackets. Many a landscape could thus be spared a bad marring. The beauty of the wireless towers always shown by the R. K. O. theaters at the beginning of an R. K. O. talking picture is a direct result of consultation with artists. The towers that have been erected for wireless, for dirigible mooring masts, and for airway beacons have all been designed with no thought for their esthetic appearance, and unfortunately the designers of these towers are much harder to reach by means of an artistic crusade than the designers of bridges.

The unsightly water tanks and towers which mar the skylines atop the high buildings in every city could easily be designed artistically. Architects are here the real offenders. Since many of them, however, have sensed how much such towers detract from the architectural merit of any building, more and more are being hidden in beautiful brick towers such as may be seen along Central Park West in New York City. The use of any one of a multitude of beautiful roof designs on the exposed tanks would make it possible completely to transform them from an unsightly class of structures into quite beautiful creations. The faces of the tanks may be decorated with columns,

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panels, relief work in copper, or painted designs. The entire tower and tank, instead of being painted with black, dull red, or any flat color, can be artistically painted in tints to harmonize with the surroundings. The towers themselves may be made artistic by the use of curved columns, with the unsightly rod bracing hidden inside, or else, through allowance for bending, the columns can be designed to resist the transverse stresses.

The great dams which have been built all over the world for water supply, irrigation, or power plants are more often than not hidden away in canyons or far from civilization where their unsightliness is unobtrusive. They can, however, just as well be made beautiful at no great increase in cost, as was done quite successfully for two dams within the city limits of Portland, Oregon. Quite a number of dams have had ornamental features designed by architects who did not grasp the basic principles of the design, or the necessity for harmony and proportion. From an artistic standpoint, therefore, they are largely failures. The copings may be beautifully molded, with properly designed dentils and pendants, with columns, lamp towers, or pylons to add to the proper artistic finish. Sometimes it is desirable to use a decorative type of bond for the masonry wall, or even a chaste form of decoration on the face of the dam. In many designs the writer has found it possible to use various architectural or sculptural features, ornamental parapets, and for lookouts tiled floors of an ornamental pattern. In fact the possibilities for simple and harmonious decorations are boundless.

Lighthouses offer a fine field for artistic design. Many European ones are most pleasing in appearance. The vertical curves used in the design of the great Eddystone lighthouse on the coast of England make it truly approach the beautiful. Similar curves were used for the Bishop Rock lighthouse, but the more spreading curves of the Bell Rock Light are much more nearly a work of art. The placing of the windows must be carried out as a feature of the design, and to create an artistic ensemble the cornices, railings, and lantern must all be in harmony with the whole design. The old five-story Cordouan lighthouse on the coast of France, begun under Henri II in 1584, but not completed until 1611 under Henri IV, was of classic design. Later the four upper stories were removed, and a round tower of very chaste design was carried up to a height of 207 feet. The Isle Vierge Light

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in France, of recent design, is a most beautifully designed stone tower of over 250 feet. The Eritrea Italian Light is a most pretentious sculptural monument, and the still more recent Livingstone Memorial Light at the lower end of Belle Isle in Detroit is of great artistic merit. Most of our American lighthouses, however, are simply round towers of imposing appearance, but with little of the highly artistic in their design.

As a rule tunnel portals all over the world are of very little artistic merit, although the portals of many Alpine tunnels are beautifully designed, as for example, those of the Simplon tunnel between France and Italy. Those for the Arlberg tunnel in the Austrian Alps are also very pleasing. Usually in the United States designs for portals have been utterly simple, with no real attempt at artistic effect. While it would be a very easy matter to set up forms and pour ornamental concrete portals, nothing of the sort was done for the eight-mile tunnel of the Great Northern Railway under the Cascade Mountains, although the extra cost would have been an almost infinitesimal part of the $25,000,000 spent for the entire improvement, one of the greatest pieces of engineering in the country. The stone portals of the Armstrong Tunnel for street traffic in Pittsburgh are, however, very fine, of chaste and artistic design.

Because engineering skill and progress have made it possible to design and erect the great and towering steel frames of our "sky scrapers" the engineer is to blame, to a large extent, for the lamentably unsightly appearance of most of our tall buildings. The fact, however, that the engineer has only been an accessory after the fact absolves him from much of the blame, which lies primarily at the door of the architectural designer. Here again the trouble has consisted in a failure to grasp the fundamental principles involved. Certainly it is deplorable that there are only two really fine tall buildings in New York City—the Woolworth building and the Cities Service building. The Empire State building is very imposing and monumental, and for these reasons it may be said to approach the beautiful. The New York Life building is another of imposing character, very chaste in its detailing. Yet when we set these few against the great number of others which are either distinctly repulsive in appearance or else bizarre, like the Chrysler building and many others of that character, we have nothing much left for self-congratulation in this great materialistic

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era of sky scrapers. The engineer is to blame now in not raising his voice most loudly against his small part in the whole, a part confined to a coordination of steel work with floor plans and elevations laid before him by the artistic designer. He should point out that there is much more for him to do than the mere planning of offsets and towers to comply with the building laws of cities, laws which produce such a crop of monstrosities in buildings as are rising in Rockefeller Center. The real problem must be attacked most seriously at its very root and core, and new forms of buildings conceived which will be basically, artistically, and economically correct. The writer designed one building of 112 stories and of a height greater than any yet built, to cover a space 700 by 1,000 feet, in which the setbacks were bounded by vertical parabolic curves. From every point of view an artistic perspective was thus presented. Such a design covering four city blocks gave a maximum of light and air, without a blind adherence to the fetish of the building code. The designing of almost every building should be marked by a close cooperation and coordination between the architect and the engineer, from the very inception and beginning of the project, with a laying aside of all professional rancor and, in the design of tall buildings, conceived so far in sin and error, a cutting loose from the present moorings to precedents.

The present arrangement of theaters and places of public assemblage is lamentable, also. From actual trial and experience the author knows that all the evils inherent in theater designs now used as precedents can be eradicated by an entire revision of layouts and by attacking the question of theater design as an engineering problem.

These are only some of the needs of the present day which must be met by engineers by a casting aside of all precedent and a starting forth on new and unsailed seas of design. The whole problem of artistic engineering is of so comprehensive a nature and of such complexity that it can only be solved by a long, patient, and uphill fight to the heights of true artistic excellence. Whether our civilization is to endure many have doubted, but we must be made to comprehend that unless all those collateral things which add to and count for real progress towards a more perfect and artistic civilization are sought with vigor and persistence, we can only look forward in the future to another and longer period of what must again be termed "the dark ages."

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Present-Day Forces in European Politics

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WE like to play with national delusions. As a people we cherish an amazing number of myths and futilities. It matters not that most of these are without basis in our history and are in plain contradiction to our national temperament. The average American gives them his unfaltering allegiance all the same.

One of these ocean-to-ocean figments of the American imagination is the idea that in a time of world stress we can go our own way, irrespective of what may happen elsewhere, and that we in America can slip back to normal conditions whether the rest of the world does it or not. That expectation is a sheer futility because it stands flatly denied by the entire course of American history during the past two hundred years. During these two centuries there has been no war in Europe and no economic upheaval in Europe which has not been felt in America. Every movement of importance on the other side of the Atlantic has had its repercussions over here. Because of Europe's vicissitudes this nation was founded. Because of religious wars the Pilgrims came to our shores. Because of national rivalries in Europe we were able to make good the Declaration of Independence. By reason of the industrial revolution in Europe we had the reign of King Cotton, the extension of human servitude, the Civil War and its aftermath. Because of persecutions, revolutions, and famines in Europe we received our great inflow of immigrants during the mid-decades of the nineteenth century. In 1848 Ireland had a potato famine of which the politics of New York and Boston today are a heritage. Ultimately Europe's militarism and national rivalries drew us into a World War, and it is Europe's bankruptcies that now bid fair to throw on the American taxpayer a disproportionate share of what that great conflagration cost. In view of all this should we continue to delude

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ourselves into seriously believing that what happens in the Old Continent is no concern of ours?

What are some of the more fundamental forces operating in the politics of Europe today? The first is a great and growing impatience with democracy, a declining confidence in democracy as the scheme of government. Twelve years ago the democratic form of government reached its zenith. Throughout the nineteenth century it fought its way forward inch by inch, in England, in France, in Italy; and the outcome of the World War was deemed to mark a great and final triumph for democratic principles. All the new constitutions which were framed at the close of the War enthusiastically proclaimed themselves democratic from preamble to conclusion. In the history of democratic institutions the year 1920 was a red-letter date, for the entire civilized world seemed to have been converted to the idea that government by the whole people is the only rational form of government. Self-determination, universal suffrage, and ministerial responsibility were in the ascendency everywhere. In those early post-War days there were none so bold as to question the categorical imperative of the *vox populi.*

But now democracy is everywhere in total or partial eclipse. Fascism is assailing her from the right and Communism from the left, while semi-dictatorships are pushing through the center in the garb of emergency constitutionalism. In hardly any European country is democratic government enjoying, nor does it deserve to enjoy, a large measure of public confidence today. The German Reich, despite all the democratic phraseology of the Weimar Constitution, has been governed for nearly three years under what is virtually a presidential dictatorship. Even in England we have something unprecedented in her long political experience—a coalition government functioning in time of peace. And France! It was only yesterday that she gave us the astounding phenomenon of a government overwhelmingly turned out of power because it was unwilling to default payment of the nation's debts. Throughout the whole of Europe, in a word, democracy is beset by doubts and fears and difficulties to such a degree that it is a serious question whether democratic institutions can long survive the strain to which they are now being subjected. There are many thoughtful Europeans who believe that the day of democracy is done.

What has happened to supplant enthusiasm and confidence by dis-

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illusionment and despair? The reason, stated simply, is this: Democracy, as a form of government, was devised to deal with small and simple public problems in small and simple communities. It first developed in rural England, then in rural America and in rural France. It gained its early foothold at a time when public problems were not so difficult but that any thoughtful man could understand the issues and pronounce a rational judgment upon them. But this scheme of government, nurtured in rural England and expanded in agricultural America, has now been carried over into an age of industrial perplexities which presents us with issues so complicated and problems so difficult that even the wisest men disclaim a clear understanding of them.

In this connection my mind harks back to a sermon, preached to a college graduating class many years ago, in which the minister said: "Now when you young men go out into the world one of the first things you ought to do is to draw an imaginary circle representing the things upon which you feel competent to express an opinion. This circle will be small when you start, but as you grow older your area of competence will become steadily larger." It seemed quite reasonable at the time, but things have not worked out that way. For myself I confess that my circle was never so great as on the day I graduated from college. Instead of growing steadily larger the complexities of civilization have developed so fast that my little ring of competence has become steadily smaller. And that experience of one individual, if you multiply it a million fold, will indicate why democracy is slipping. We are asking too much of it. Nations have been submitting to the masses of their people problems which the average man cannot understand, much less pronounce a sensible judgment upon, with the result that one futility after another has been imposed upon the governmental authorities through the pressure of the populace. There is scarcely any form of political stupidity that some European country has not tried to put into operation during the past ten years, and among them they have battered the economic structure of a continent to pieces.

Either we shall have to simplify our problems of public policy to a point where the forgotten man can understand them (which will be very difficult to do) or we must revamp the organization of popular government in some way that will bring democracy back into world confidence. What we need is not a technocracy but a sapientocracy—

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in other words any kind of government that can induce the people to choose wise leadership and to follow it. The world's situation today is not so much due to the lack of leaders as to the unwillingness of the people to put confidence in them, support them, and follow them. Among all the fundamental forces in European politics today, a rapidly waning faith in the traditional scheme of popular rulership is the most conspicuous.

A second force profoundly influencing the politics of Western countries today is the groping of peoples for a new economic order. The demand is not for something definite, something that the popular mind conceives as a plan; it is rather an aspiration, a casting about for some sort of far-reaching economic reconstruction. Among the political leaders of Europe, apparently no one, not even Mussolini, seems to envisage just what this new economic order ought to be. Even Stalin, who holds the destiny of Russia in the hollow of his hand, has not been clear as to what a communistic order of society really implies, except that it ought to be quite different from that existing in capitalistic countries. Consequently we have had in Russia one change after another, a New Economic Policy and a Five Year Plan, one experiment after another, each giving way to something else within the course of a few years.

Once upon a time the whole of western Europe had an economic system known as feudalism, a system in which the workers were under the protection of a higher authority; they were given enough land on which to live; they were assured of work whether there was work or not; at all times they were cared for, supported, and nurtured by their feudal lord. The rank and file of the people gave homage and service in return for which they were looked after in good times and bad. But the day came when men wanted to be free from this feudalism, to be full masters of their own destiny; and in due course feudalism passed off the stage. Its place was taken by a system of laissez-faire and rugged individualism in which every man was vested with both the right and the obligation to map out his own career and rustle for his own living.

Today, however, whether we realize it or not, the Western World is hurrying backward full speed, to a state-feudalism in which governments are being asked to reassume the rôle and the responsibilities of the medieval lord. They are being called upon to secure every

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worker a livelihood, with work if there is work or with pay if there is no work, to socialize industry in a way that will give every individual subsistence in return for his having been brought into the world.

In the heyday of free competition and laissez-faire it used to be said that although the world owed every man a living it was up to him to collect it. Now, with the advent of the new-age feudalism, the public authorities are supposed to do the collecting by the taxation of those who have for the benefit of those who have not. Every European country is moving at a varying pace towards a feudalized industrialism or an industrialized feudalism, whichever you like to call it. America is bound to feel the force of this wave in time and probably within a short time.

Finally there is a third force in contemporary European politics—the accentuation of a nationalistic spirit everywhere. Never have the various countries of Europe been so intensely nationalistic as now, never so lacking in any real spirit of international cordiality and cooperation as now, and this despite the existence of a League of Nations with its Council and Assembly. A Frenchman was never so aggressively a Frenchman as today, or a German more Germanic, or an Irishman more livid in his Sinn Fein enthusiasm. From Latvia to Greece an intense nationalism has developed in every European country.

This is largely the result of the War, or, more accurately, the outcome of the peace. I believe that most of the world's troubles today are not so much due to the War as to the treaties of peace that followed the War. More capital has been dissipated during the years that have elapsed since the peace conference than was wasted in the entire four years of the great struggle, and more men are out of work today than were enrolled in all the armies during the Great War.

A group of statesmen cherishing high ideals adopted as a formula for the new map of Europe the principle of self-determination based on race. Through President Wilson we had a good deal to do with the propagation of the idea that every country should be racially homogeneous—and that to this end all Czechs should be put together, and Poles, and Letts, and Finns, and Jugoslavs. For that reason the peace conferences proceeded to Balkanize the Old Continent. But a country cannot subsist on self-determination. It needs raw materials. markets, communications, diversity of resources, and a variety of economic assets which do not necessarily fall within the boundaries set

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by race. No country, whatever its racial integrity, can be prosperous and contented if it is deprived of its natural markets on the one hand and cut off from its logical source of raw materials on the other. That in some cases was what the peace treaties managed to bring about. Austria, for example, was in this way sentenced to a lingering decrepitude. "You take my life," said Shylock, "when you do take the means whereby I live."

It does not exonerate the statesmen of the peace conferences to say that their errors were motivated by the highest of humanitarian ideas. They gave too much play to politics and too little to economic considerations. The Paris Conference adjourned without fixing the amount of German reparations, without discussing the inter-allied debts, without any definite provision for disarmament, without doing a dozen things which subsequent conferences have been frantically trying to do. The peacemakers broke up some large countries and set a group of new states to shift for themselves, each grounded on a racial solidarity which speedily manifested itself in an intense nationalism. Under its influence these new states launched into an orgy of tariff making, throwing up tariff walls to stimulate new industries so that they would not have to buy anything from outside. But since the new industries, despite the tariff protection (and indeed because of it) could not find sufficient markets and were frequently unable to operate at a profit, the government came to their aid and subsidized them; and when men were thrown out of employment the government subsidized them also. To pay for all this it became necessary to over-tax, to over-borrow, to inflate the currency, and sometimes even to take over the industries. Thus the vicious circle ran its round, with tariffs, subsidies, deficits, inflation, the flight of gold, and defaults.

Self-determination gave these countries the right not only to govern but to misgovern themselves, and they did it.

One reason why we are likely to get very little money in payment of Europe's indebtedness lies in the existence of this nationalistic spirit. It is to the glory of England and a tribute to English public integrity that she met her obligations last December although they were larger than those of all the rest of Europe put together. Yet if the question of stopping debt-payments to the United States were put to a popular vote in any country of Europe today, the decision would probably be overwhelmingly in favor of the stoppage of all future payments. The

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voters would look upon the matter from the simple standpoint of self-interest; they would put themselves and their own country first and care not what happened elsewhere—a lesson learned from the propagandists of nationalism. The very assumption by the people of any nation that obligations contracted in good faith and for value received can be repudiated without mutuality of agreement shows the change wrought in national ethics during the years since the War.

Well, what can we do about all this? How can we serve the world in a way which will prevent the foregoing forces from bringing civilization to catastrophe? In the first place, let us in America show that there is at least one nation under a democratic régime that can keep its head; that there is one government which will not allow itself to be stampeded into any kind of dictatorship. Let America, by sanity of action in this crisis, make herself the basis upon which world confidence in democratic institutions can be restored, for no other country is in so good a position to do this.

Second, let us give the world an example of economic reconstruction brought about in orderly fashion and in keeping with sound principles of public finance. Such a lesson would be of immeasurable value to the rest of the world at the present juncture. Let us begin by balancing public budgets, cutting the cost of government, avoiding unmanaged inflations, overhauling our tax systems, injecting resiliency into our institutions of credit, negotiating reciprocal tariff agreements with other countries to stimulate foreign trade, and dislodging the "fear psychology" from the public mind.

Finally, let us get rid of the delusion that this country can go ahead while the rest of the world goes back. The fate of world civilization is our concern. And the duty of leadership out of the present morass is ours by the logic of national prestige, wealth, and power.

There was an ancient Roman boast, *Civis Romanus sum*, "I am a Roman citizen." When the Roman said it he meant that he had both rights and duties different from those of other men. But when you and I, as citizens of a Republic which is far more powerful than ancient Rome, say *Civis Americanus sum*, do we merely mean "I am an American citizen; I want all the international rights but none of the obligations; this is my country, I have no interest in the vicissitudes of other nations"? Such an attitude would be a repudiation of all our national ideals.

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The Merger Movement in America

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FROM the World War to the Wall Street crash of November, 1929, the United States passed through the greatest merger period of its history. Until after the Civil War most Americans took it for granted that America was, and would continue to be, a country of the small business man. From the sixties to the eighties of the last century, however, the small business began to develop into the large corporation while "pools" and "gentlemen's agreements" bound together in cooperative action many formerly competing concerns. Later a number of these pools gave way to trusts of the older type in which a group of trustees was allowed to hold the property of formerly competing firms. Among these trusts the Standard Oil, organized in 1879, was a pioneer. The formation of these monopolies led to vigorous attacks and, finally, to the passage of the Sherman Anti-Trust law of 1890, which act, together with other laws, helped to bring the first trust movement to an end.

Beginning, however, with the campaign year of 1896, which witnessed the defeat of William Jennings Bryan and the victory of William McKinley, a second combination movement set in. In this second period the old type of trust gave way to a new type of holding company. During the next seven or eight years this new merger movement carried all before it and by 1904 John Moody was able to record a list of over three hundred great combinations. A mighty wave of protest followed in the wake of these mergers; leading articles condemning the steel, the beef, and other trusts appeared in the principal magazines; Theodore Roosevelt began to wield his "big stick" against the "malefactors of great wealth"; and in 1904 the Supreme Court dissolved the great railroad holding company of the West. Again the

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merger movement slowed up and the average citizen began to give his attention to other developments. Then followed various Supreme Court decisions in the United States Steel and other cases, permitting the continuance of these great corporations. Mere size, declared the Court, was not in itself to be regarded as illegal.

In the meantime the World War broke out. During the War the United States permitted and even encouraged a degree of cooperation between corporations such as had previously been regarded as utterly illegal.

Following the armistice the country passed through the depression of 1921 and then through the boom days ending in the debacle of November, 1929—boom days which presented to many an opportunity, unparalleled in the history of the country, to float industrial and financial securities. During this period a third merger movement, more extensive than any of its predecessors, took place. As a result of this sweep, in the past, toward concentration, two hundred great corporations, as Drs. A. A. Berle and Gardner Means of Columbia point out, now do about 40 per cent of the business of the non-financial corporations of the country and own about one-half of the assets of these corporations; and by the middle of the century, if present trends continue, these two hundred will control, not 50 per cent but 80 per cent of these assets.

In preparing my book on *Concentration of Control in American Industry*, I myself have been amazed at the strides taken away from the "rugged individualism" of the past and toward private monopoly. Take, for instance, our natural resources. Here we find that one corporation—the United States Steel—controls from one-half to two-thirds of the iron ore resources of the country; one corporation, dominated by American interests, owns nine-tenths of the nickel resources of the world; one corporation, headed by the Andrew Mellon family, owns nine-tenths of the raw material used in the making of aluminum; four corporations control a majority of the copper resources; while eight companies, connected with the railroads, own about 80 per cent of our anthracite reserves.

Proceeding from our field of natural resources to our public utilities we find that in the telephone industry one system, the Bell Telephone, collects seven out of every eight dollars spent in the United States for telephone service; in the telegraph industry the Western

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Union covers four-fifths of the field; in the electrical and gas industries a smaller and smaller number of holding companies is controlling the situation. And so the story goes. And in parentheses it may be added that, as stocks are held by a wider group of people, control is concentrated, through proxies, etc., in the hands of the officers and the administrators.

In manufacturing, concentration has proceeded apace with the result that in many lines of activity one corporation now controls 50 per cent or more of the market. This is true, among others, in the manufacture of farm machinery, of shoe machinery, of sewing machines, of Pullman cars, and of cash registers; in sugar refining, in the making of soups and crackers, and in that delectable American business of chewing gum. In an increasing number of industries two corporations cover more than half of the field—for example, in the steel industry, Ford and General Motors make three out of four of our cars; in the cigarette industry two firms produced 60 per cent of the 130 billion cigarettes manufactured in 1930; in the electrical machinery industry two firms govern the production of more than half the cars and locomotives manufactured; and in still other lines three or four giants are in almost complete control.

Years ago when a student of economics talked of concentration he was told that, while trends toward concentration might be seen in other fields, they would never be found in the field of retail distribution, that the independent corner grocery man would remain an independent storekeeper until Gabriel blew his trumpet in the morning. As for our cigar stores, the ferocious wooden Indian (symbolic of our first rugged individualist) which usually fronted these stores would surely scare away any attempt of Big Business to obtain control. But today we find one grocery corporation owning some sixteen thousand stores, doing a business of a billion dollars a year, and extending its activities, as its name suggests, from the Atlantic to the Pacific. Ten great chains each do a business in a normal year of a hundred million dollars or more annually.

Finally if we turn to banking we discover there that one per cent of the banks of the country control as great resources as the other 99 per cent. With their chain and branch banks and investment trusts and large private banks we find that the great bankers are becoming ever more powerful factors in the economic life of the nation, although in

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the field of banking concentration has taken place in the United States to a much smaller extent than in England and Canada. With the emergence of the vertical and horizontal trusts, the trade associations and the interlocking directorates, the days of the older type of competition seem to be numbered all along the line.

Abraham Lincoln once said that this country could not remain half free and half slave. Modern students realize that this country cannot be at one and the same time a political democracy and an industrial autocracy. Those in control of the industrial machine have tremendous power over the economic, the political, and the cultural life of the nation and have generally used that power for their own selfish advantage. It is of tragic significance that, outside of our railroads, trade union organizations controlled by the workers have been barred from practically every great corporation by the employment of every kind of device, ranging from welfare measures to the use of spies, company guards, injunctions, and state constabularies. An increasing number of students are maintaining that we are becoming a nation of "yes men."

The trend toward concentration has been accompanied by enormous inequalities in wealth and income, inequalities based not primarily on the differences in ability or industry but upon the ability to have and to hold the basic industries and to fix the prices on the necessaries of life. One man recently died in New York with an estate equal in value to the annual wage of 150,000 average American wage-earners. During the recent period of our mergers, from 1923 to 1928, while the average annual real earnings of wage-earners increased at the rate of about 1.4 per cent a year, industrial profits increased at a rate of over 7 per cent a year.

The trend toward concentration has been attended likewise by increased insecurity. In the post-war year of greatest prosperity a minimum of nearly a million and a half were out of jobs, while today we are facing the most disastrous depression of the last generation. With proper social planning, as the vice-president of the American Society of Mechanical Engineers asserts, we could provide "raw material, machinery, and trained labor sufficient to flood, bury, and smother the population in such an avalanche of food, clothing, luxuries, and material refinements as no Utopian dreamer in his busiest slumbers has ever conceived." With such planning and an equitable distribution of

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wealth and income, poverty could be abolished from the land and every human being in the country willing and able to work could live a life of security and comfort. And yet we are faced by the present tragedy.

What is the way out? Three general proposals are being made.

The muck-rakers of the past declared that the way out was to retrace our steps, to "bust the trusts," to return to free competition. This we have been trying to do ever since we put the Sherman Anti-Trust law on the statute books forty years ago, but we have found it difficult, in the words of the elder Morgan, to "unscramble scrambled eggs." The fact is that, as Professor Frank A. Fetter has pointed out in his *Masquerade of Monopoly*, free competition has been but a mere passing episode between the earlier stage of feudal monopolies "and the newer industrial feudalism of the last half century." Suppose that Jack and Jill are competitors against each other for a market, and really engage in free competition. What is likely to happen? If Jack is more efficient or clever, he is likely to undersell Jill, and sooner or later force Jill into bankruptcy or absorb him in Jack's business. If both are equally strong they may either lower prices until both go out of business and another steps in—or until both get the brilliant idea that they had better talk the matter over and arrange a merger, or at least agree to limit their competition as far as prices or territory are concerned. If any of these things occur, free competition ceases to exist.

Even though it were possible to bring back competition and stabilize it an increasing number of men and women are declaring that it would not be desirable, for they claim that it would lead to endless wastes and that, as far as wage-earners are concerned, it doesn't matter a great deal whether they are employed by a great number of small employers or by a small number of great employers. The days of free competition in England and America were not days of paradise for the mass of the people; and in these days, when students of social problems are realizing that many of our ills result from a lack of plan in our economic life, people are less inclined than ever to strive to return to the planless system of free competition. Professor Fetter in his able volume endeavors to prove that the trend away from free competition and toward monopoly has been largely fostered by the Pittsburgh-Plus system. The development of the machine, the enlarge-

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ment of the market, the increase in overhead, the working of the patent laws, the desire for speculative profits and competitive wastes have, however, been far more powerful factors in the development of the mergers and trusts than has the factor mentioned by the Princeton economist.

The second possible line of action in dealing with trusts and monopolies is that of regulation of the great combines. We have, however, tried regulation in our public utilities and have thus far found it wanting. The regulated have too often regulated the regulators. In New York State, under regulation, three-fifths of our electrical utilities reporting to the Public Service Commission were allowed in 1928 to make profits of 9 per cent or more a year; two-fifths, of 12 per cent or more; and one-fifth of 15 per cent or more. In Pennsylvania, according to Governor Pinchot, six electrical utilities in 1929 made profits of from 26 per cent to 69 per cent on their own valuations. The Public Service Commission of that State, according to the Pennsylvania Governor, has been worse than useless. "Effective regulation," declared the Minority report of the recent New York State Commission for the Revision of Public Utility Legislation, "has broken down and the consumer has been left to the exploitation of the monopolistic private companies which control the public services." Commissioner Joseph P. Eastman of the Interstate Commerce Commission, after watching the workings of regulation for many years, has come to the conclusion that regulation must give way sooner or later to public ownership. "The substantial advantages of public ownership," declares Commissioner Eastman, "are low cost of capital; opportunity gradually to reduce or eliminate the capital charge without hardship on the public in the process; and, above everything else, freedom from the valuation nightmare." Even under a more effective form of regulation, society would have to support large numbers of people on the basis of their ownership rather than their intellectual or manual contribution to society. And any effective form of regulation would necessitate the supporting of a vast and expensive army of regulators, many of whom might easily be regulated by those intent on profit.

An increasing number are thus declaring that we must go forward to public, to social, ownership and are urging that the nation own the trusts. They maintain that in a number of ways the trend toward concentration is preparing industry for social ownership. In the old days

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it was argued that the government could not transfer industry from private to public control because it would be necessary to negotiate with hundreds of separate corporations in each field. At present, however, in several fields, the transfer of one, two, or three corporations from private to public ownership would give to the public the control of most of the industry. Formerly we were told that no industry could be managed under one roof. But the development of the empires of telephones, steel, etc., shows that this is not the case. If such control is possible under private ownership it is also possible under public ownership. Formerly it was said that public ownership would not work, yet experience is proving that it is. When, in the early part of the last century, groups in New York, Boston, Philadelphia, and other cities organized labor parties for the purpose, in part, of agitating for public schools, they were told that they were striking at the very foundations of the American government and were denounced as "dividers up." In education, however, in health, in recreation, in highways, in water supply, and in other services we have advanced increasingly toward public ownership, while abroad the trend away from private to public ownership is a most significant one.

Many are advocating that in the future public industries be operated as government corporations of the type of the Port Authority of New York, on the ground that these permit of greater initiative on the part of the administrators than does the older form. An increasing number favor a social ownership under which worker, consumer, and technician will be adequately represented on the Board of Directors, and under which the manager will be selected by such a Board because of his efficiency, not because of his political affiliations.

Advocates of public ownership maintain that it has a number of distinct advantages over private ownership, even though effectively regulated. Under social ownership, they declare, the tragic wastes of competition would be avoided. If we eliminated these wastes, the workers of the country could produce, in possibly half the time, as many useful commodities as they are now producing. Under social ownership a man would be paid on the basis of his work and not his ownership of vital industries, while the worker would not have to give a large part of the social product to the absentee owner. The community would be the owner of these industries and whatever wealth was produced would go to the nation's producers. Reward would be

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based on merit—not to a considerable extent on mere power of acquisition or on accidents of birth. A situation such as at present exists in which millions of people are idle and facing hunger and even starvation while close by food rots on the ground and factories stand idle would be unthinkable if the people, through their own government, owned and operated their industries for the common good; for under social ownership it would be possible to plan nationally and internationally with a view to social ends.

Finally, the undemocratic power which the possession of great fortunes gives would be a thing of the past, while men and women would be motivated by an industrial incentive consistent with, not antagonistic to, the development of the good life. The objection is, of course, made that administrators would not do their best work unless spurred on by the profit motive. We find many business men working hard for large fortunes today, partly because of the comfort and power which riches give, but to a large extent because the acquisition of money spells success under a profit economy. "That business man is a success," says Citizen John. "Why? He is a millionaire." That is proof enough. In other lines of effort, however, where there are other criteria of success than money, people work fully as hard for other incentives. Although there is not one teacher out of a million or more in the country who has any chance of obtaining a fortune out of the teaching profession, the vast proportion of our teachers work with industry and with intelligence. Similarly in the consumers' cooperative movement, so powerful in Europe, and in many publicly owned industries, there are thousands of administrators who are doing splendid work with no thought of profit. Security, a fair salary, a feeling of a job well done, the regard of their fellows, spur them on to their best endeavor.

Even in business the old incentives are passing. In the days of the small business, since the administrator was usually the owner of the business, the more the business earned, the greater the profit which went to the administrator. Today, however, the average large corporation is owned by inactive stockholders who know little or nothing about the running of the concern. It is conducted, instead, by administrators, engineers, and rank-and-file workers who may or may not own any stock in the concern. Management and ownership are becoming separated as never before and many an administrator depends for

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his chief material incentive on a salary, with the profit going to the inactive stockholder. President Walter S. Gifford of the American Telephone and Telegraph Company declared a few years ago:

> From the incentive of personal profit the change is to me one of pride in the job and the satisfaction of rendering a public service . . . more and more I encounter men of the highest ability who regard business not as a means to acquire personal wealth, but as a fascinating profession and as an opportunity for accomplishment. They do not seek more money from it than enough to give them comfortably only those things really worth having that money can buy—freedom from financial worry, security for their family, books, art, and travel. But they do want an outlet for their energies, exercise for their brains, and, above all, they genuinely want to be useful. . . . Business is becoming a profession.
>
> New incentives to effort are in force. I know it is popular to smile at the notion that the ideal of service, of a job well done, is an adequate substitute for mere acquisitiveness, but it is becoming daily more evident that this is really so. Today, without the possession of great sums of money one may live well, and it is increasingly questioned whether great fortunes are a real help to happiness.

If industry were socialized many of these salaried administrators would work just as loyally for the community as they are now working for private owners. An increasing number of students are agreeing with the view of Joseph P. Eastman of the Interstate Commerce Commission that "it would be a far healthier situation that this country should struggle toward an ideal than that it should surrender to the baser principle that the public good can only be attained to that extent that it happens to coincide with the ends of private profit."

Increasingly the question is narrowing to one of effective regulation—if such is possible—or public ownership of the monopolized and semi-monopolized industries. The developments of the next decade will be of tremendous significance to our whole national life.

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The Blessing of Unemployment

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"TERRIBLE plague of beetles we've got this year," said the Massachusetts farmer who had given me a lift.

I assumed a polite interest. "What do they eat?"

"Apple trees, mostly. Half of the trees down at my place are ruined for the year."

"That's a damned shame," I commented.

My sympathy fell on stony soil. My host was an unselfish man who looked above his private calamities to the larger social good. "Well," he mused, "you know it's not a bad thing on the whole. Makes work for a lot of men. The government must have a hundred men spraying trees along the road from here to Worcester."

Even a trained hitch-hiker's power of agreement failed at that point. I finished the journey in silence, trying to understand why a farmer should bless the beetles that made work and ruined his trees. After all, the government could have employed the same hundred men in a sham battle against imaginary beetles. That would have been much better, because there would be just as much work and more apples.

The next winter was mild and pleasant in New York. The more kindly of the metropolitan papers deplored the fact that there was no snow, because that meant that the city's unemployed could not be put to work shoveling it away. Months later I read in the financial columns of the same papers that rumors of an impending war which might engulf the United States had started a "wave of optimism" in Wall Street. Prices of stocks and commodities were bound to rise and this would bring back prosperity.

Wars, snowstorms, and beetles, it seems, are great blessings. They

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end the curse of unemployment. But they are not very reliable, and when they fail to come we must look for adequate substitutes. In the last three years we have managed to find at least a half-dozen excellent substitutes.

Low wages are perhaps the most obvious cure for unemployment. When a man's wages are too low to support a family his wife is likely to take in washing and his children to sell newspapers or shine shoes or work in a cotton mill. Thus the number of persons gainfully employed rises. And when wages are low enough the rich can afford to hire more housemaids, butlers, chauffeurs, valets, tutors, and gigolos, all of which tends to relieve the unemployment situation.

Sabotage is another cure for unemployment. In order to be able to work at planting and harvesting a new crop Brazil burns a million tons of coffee. We do not do that in America because coffee does not grow here. And in America the Federal Farm Board advises Southern farmers to plow under every third row of cotton. This makes work in two ways: in the first place there is the plowing, and in the second place there is that much more planting to be done the next year (or in the next state). In this respect cotton has an advantage over other commodities, because it is less trouble to feed wheat to pigs, to let fruit rot on trees, or to pour milk down sewers than to plow under every third row of cotton. But all destruction of commodities leaves room for more production and more work.

A third substitute for wars, beetles, and snowstorms in ending the evil of unemployment is a favorable balance of trade. Obviously the more goods a country ships out and the fewer goods it receives in exchange, the harder it will have to work to keep from starvation, and the less unemployment it will have. Three methods of creating a favorable balance of trade have already been discovered by financiers. One method is to lend money, that is, to send food and clothing in exchange for paper, to other countries. This was tried with great success during the War. Never before or since have Americans worked so hard and eaten so little. Unemployment was practically abolished for three years. Another method is to cancel the loans after they have been made. Such cancellation encourages foreign countries to send us more gold or paper in exchange for commodities, and puts our workers into the fields and the factories to make those commodities. It also puts our bankers to work trying to figure out what to do

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with the gold and paper. A third method of creating a favorable balance of trade is to prevent other nations from sending us the commodities we need. This is ordinarily accomplished by what is called a protective tariff. Sugar, for instance, grows almost by itself in Cuba, and if Americans bought sugar for the price at which Cubans are willing to sell it, very little labor would be employed in the sugar-growing industry. By placing a tariff on Cuban sugar, however, we keep enough of it out of the country to make it necessary for thousands of Americans to work at picking and squeezing sugar beets in Wisconsin or trying to grow sugar cane in the swamps of Louisiana. Consequently thousands of men, women, and children who would otherwise be unemployed have work; and what we can accomplish in this industry we try to accomplish in almost every other. Where a tariff fails we may use an absolute embargo to exclude foreign commodities that we need. An embargo on Russian lumber would thus put several thousand Americans to work chopping down our remaining forests and raising our employment totals.

A fourth, and widely discussed, remedy for the curse of unemployment is the raising of commodity prices. This has the same effect as a lowering of wages, forcing women and children to join the ranks of the gainfully employed upon penalty of starvation. Just how prices can be raised when most people have no money to spend is a difficult problem, but economists and politicians are working hard trying to perfect ways of reducing the value of money in order to make goods more expensive, and hopes for their success are widespread.

Another modern prescription for the cure of unemployment is being carried out in "Buy Now" and "Give a Job" campaigns. The theory underlying these campaigns is that the more money people spend on things they do not need, the more work there will be for other people to do—a theory which may be applied to states as well as to individuals. Italy puts uniforms on its unemployed and calls them soldiers, thus reducing its unemployment percentage almost to the Russian level. Our own government is busily engaged in giving employment by digging out the bottoms of rivers and building roads between Nowhere and Next-to-Nowhere.

Perhaps the most ingenious of the recent schemes for ending unemployment is the "Back to the Farm" movement. The theory of this movement is that the simplification of agriculture in the giant ma-

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chine-driven farms of the West is one of the chief causes of unemployment. It follows that if we send people back to the stony soil of abandoned Eastern farms there will be a great increase in the labor required to raise the nation's food and hence a great decrease in the ranks of the unemployed. This theory need not be restricted to agriculture. A general limitation upon the invention and use of labor-saving machinery will undoubtedly prevent the ranks of the unemployed from growing, and if we really want to reduce those ranks we can abolish machinery altogether and resume the habits of the good old Neanderthal days when everyone had as much work as he could do.

How far the foregoing program will be put into practice remains to be seen. There are philosophers who think that Western civilization is not far from the complete application of this program, and that its objective of ending the curse of unemployment will be achieved. But one may believe that this program for ending unemployment is logically fitted to achieve its proclaimed purpose, and yet believe that the purpose is not worth achieving.

Some such opinion seems to have been in the mind of Jehovah when he laid upon Adam a curse fitted to Adam's Original Sin—the Curse of Work: "All the days of thy life thou shalt labor, and in the sweat of thy brow shalt thou eat bread." Adam's children inherited this curse and soon learned to make a virtue of the necessity. Idleness thus came to be regarded as a sin, rather than a source of love, art, inspiration, and wisdom. It is told that God relented, after many centuries of human toil, and sent a messenger to Adam's children to offer a general pardon. "Toil not, neither spin," said the messenger, and he showed to the sons of Adam the loveliest of flowers and promised that when they had put aside their accumulation of riches and their care for the morrow, they themselves should grow as fair. But Adam's children had so long praised each other and themselves for their industriousness that they were ashamed to admit that work was a curse. Some of them called the messenger a radical agitator and demanded his death. Others accepted the pardon that was offered and laid down their chains of bondage. But these latter were unused to the walk of free men, and so they perverted the words of the messenger into a doggerel that ended with the refrain, "Satan finds some mischief still

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for idle hands to do." And they went back shamefaced to their chains and sang new hymns in praise of the sweetness of chains.

For weary centuries God heard these hymns in sadness and saw Adam's children glorying in their toil. But God observed at last that those who gloried most in toil did not toil, and that those who sang most loudly the loveliness of chains allowed other men to carry their chains. Whereupon sadness became disgust, and the compassionate heart resolved to offer again the pardon once refused. Men who would not listen to Words might yet listen to Things, and God sent upon the Earth Things which would do the work that the children of Adam had done, and these Things were called Machines.

Some there were of the children of Adam who said simply, "Now we shall live as Adam lived, without toil." But others more subtly reasoned: "With machines one can make new machines. With new machines one can destroy old machines. There is thus no end to the making of machines. And machines which make things will also destroy things. There is thus no end to the making of things. Therefore the message of the Machine is that we shall work without end. Let all who hearken not to that message die."

If work is a curse, unemployment is a blessing. How to increase this blessing of unemployment and distribute it more fairly is the fundamental problem of modern civilization. At the present time we have enough unemployment in America to guarantee every child eighteen years of freedom from industrial drudgery, to reduce the working week to thirty hours, and to give every one a month's vacation every year. But that is only the first step in the task that faces us. The total amount of unemployment available for distribution can be vastly increased if we are willing to abolish all useless labor.

A program for the abolition of useless labor might begin with the industry of war, which in these days of peace employs over a million American workers. The myth of armed defense which calls forth this prodigious output of non-productive labor contains two ingredients, both of which are poisonous: first, the foolish fear that Mexican or Canadian armies will pour over our borders as soon as we reduce our arms and armies, and secondly, the equally groundless hope that an army or navy or even an air force will be able to protect our cities from French, Russian, or Japanese bombing planes. The recent Japanese

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lectures in military science at Shanghai have taught all who care to learn that in the present state of military technology the defense of peaceful cities against aerial warfare is an idle dream. Those writers of patriotic anthems who want an army to defend our mountains and brooks after our cities are gone might fairly be asked to organize their own corps for the purpose.

The waste of man-power involved in the industry of war is more dramatic but hardly more extensive today than that involved in the industry of advertising. A few kind words may be said for the by-products of advertising, as for those of war, but the net social product of advertising is nothing, or something less. If the Snark Corporation spends a million dollars to convince the public that its cigarettes are superior to those made by the Boojum Corporation, the Boojum Corporation must spend a like sum to counteract the Snark campaign. At the end of the struggle the two corporations are in the situation made famous by two dusty travellers, each of whom bet a dollar that the other could not eat a grasshopper, and who, when the two morsels had been downed, asked each other with glum and puzzled mien, "Why the hell did we eat those grasshoppers?"

Not all advertising is self-cancelling in this simple way. The combined campaigns for Snark and Boojum cigarettes may increase the total consumption of cigarettes by leading people away from cigars and sweets. But this merely means that sellers of cigars and sweets will have to reply with new advertising campaigns of their own. The net social result is simply the transfer of business within each trade to those who ask for it most eloquently, and the depression of the level of consumption in trades which are not organized in such a way as to make advertising profitable (e. g. unprocessed farm products, personal medical service, and the non-social arts). If advertising is socially productive in so far as announcements of new products, processes, and services enable the consumer to buy more wisely, the fact remains that such advertising represents only a minute portion of the field of advertising, and probably a much smaller portion than that occupied by positively misleading advertisements which spread erroneous opinions, inculcate tormenting desires, and plant insidious and groundless fears.

Add to war and advertising such non-productive industries as speculation and gambling, the manufacture of nutritionless foods

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and poisonous medicines, the provision of recreations that do not recreate and services that do not serve, and the manufacture and distribution of a thousand knick-knacks and super-luxuries that fill no wants which a rational society would balance against the human cost of production, and one has covered about a fourth of the labor that men are paid to perform. It is likely that an equal amount of wasted labor is called forth by the manufacture and sale of ordinary commodities that are badly made because the purchaser is unable to distinguish them from goods of better quality until they are used and because the profits of the sellers are largely dependent upon the rapidity with which the goods they sell wear out or become obsolete.

The production of useless or shoddy articles is only one phase of the problem of industrial waste. Equally important sources of useless labor are the duplication of effort inherent in free competition and the industrial sabotage inherent in private monopoly. Free competition gives us Ohio coal in Illinois, Illinois coal in Ohio, and a procession of from two to six milk wagons on every city street every morning. Free competition gives us 40,000 kinds of steel windows, 78 sizes of blankets, and 1,351 varieties of files and rasps; while the publishing trade discovers that it is afflicted with 6,000 brands of paper and 147 varieties of filing cabinets. The percentage of industrial effort wasted through useless diversification has been estimated by the United States Department of Commerce at 25 per cent. Free competition gives us 800,000 stores that employ seven and a half million people and operate, according to the estimate of Veblen, at a general efficiency of from 10 to 25 per cent. Free competition gives us motor cars for which, according to Stuart Chase's calculation, the cost of selling is seven times as much as the direct labor cost of production. Free competition imposes upon railroads, factories, and mines the overhead cost of a capacity that is never realized, and that, according to David Friday's estimate, consumes the useless labor of two and a half million workers.

Some of the wastes which we associate with the régime of free competition are being swept away by the rising tide of private monopoly. But private monopoly inaugurates new types of waste. The essence of private monopoly is the power to restrict the supply of goods or services available to the consumer. Such restriction is effected either by the destruction of commodities or by the sterilization of means of

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production. Farm products are allowed to rot in fields and orchards or are thrown on city dumps, fruit trees are uprooted, fields of wheat and cotton are burned, milk is poured down sewers, fish are thrown into the ocean, ships are scuttled, labor-saving inventions are suppressed, and machinery is allowed to rust and crumble behind closed factory doors. Industrial sabotage in these wholesale forms is less disreputable but infinitely more destructive of the products of human labor than all the monkey wrenches thrown into America's printing presses and power looms by discontented workers.

As our industrial organization oscillates between the wastes of free competition and the wastes of private monopoly it consumes useless labor which conservative engineers and statisticians have estimated as equal to one-third of the nation's effective man-power. If half of the goods and services thus produced are not worth producing, we are in a position to cut down our original estimate of the necessary working week by 67 per cent.

A general working week of ten hours is thus a fairly immediate possibility. Possibilities there are, less certain, but perhaps more significant, in the funeral vaults of the patent office, where we sacrifice the first fruits of our laboratories to the gods of our economic order. Only those who have followed the course of labor-saving inventions that promise to revolutionize particular industries, and have observed the suddenness with which accounts of them vanish from the public and the technical press, know how far the power of the machine has been emasculated at the command of vested interests.

The question of whether employment can be abolished entirely is no longer a matter of Utopian speculation. To abolish employment is not, of course, to abolish work, but only to eliminate the sort of work that men have to be paid to perform. Even today a large part of the world's most efficient and most useful work is done by the unemployed, by physicists, engineers, physiologists, and artists who, though they may receive pay for their work, do not work for their pay—who, in fact, continue to work when life pensions are offered them. The capacity to work for the love of the thing created, for the thrill of personal achievement, and for the respect of one's fellow creatures, is shared by every one who plays at hunting, gardening, tennis, or the rearing of children. The distinction between work and play is a relative one, depending least of all upon the strenuousness of the activity

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involved. Play is work when done for reward. Work is play when performed for its own sake. To reduce the volume of the world's essential work to a point at which men's vital drives suffice to guarantee its performance is an ideal which can no longer be dismissed as a scientific impossibility.

One thing is certain: we shall not attain the ideal of unemployment unless we seek it.

Those who talk of the need for ending unemployment are motivated, in part, by an honest belief that idleness is sinful. This belief, which finds expression in our poetry, religion, and philosophy, as well as in our economic thought, is in part the reflection of a temper engendered in the industrial conquest of a continent, and is natural to those who have been too busy to learn the values of idle love, useless art, and disinterested thought. Certainly we have never had, in this country, that love of leisure which leads so many successful business men in England, France, and Germany to retire to the study, the laboratory, or the country estate when they have secured for themselves a guarantee of life's physical comforts. So long as the glorification of the strenuous life remains an integral part of our cultural heritage it is unlikely that we shall accept the blessing of unemployment which science has brought so near to our hands. There is, however, in our restless attempts to "cure" unemployment a purpose more noble and more generous than contempt for idleness. The word unemployment has come to be used as a euphemistic synonym for poverty. But this is more than a fashionable convention. It is at once a symptom and a cause of popular confusion between the problem of unemployment and the problem of poverty. The two problems are quite distinct. We do not put an end to unemployment by making people rich. And, what is more important, we do not eliminate poverty by abolishing unemployment. Many nations in which a pitifully low standard of living is widespread, e. g. Italy and Russia, have almost no unemployment. Most of the measures now advocated in this country as cures for unemployment are direct causes of increased poverty among the masses.

If we want to abolish poverty, rather than unemployment, we shall do better to face our objective honestly and state it in plain terms. If we free ourselves from the popular confusion between the problem

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of poverty and the problem of unemployment we shall be less likely to seek economic salvation in the patent medicines of currency inflation and industrial sabotage. We shall pay closer attention to the less spectacular instruments that the nations of the world have found most effective in ending poverty—the minimum wage, restriction of the hours of work, steeply graduated income and inheritance taxes, unemployment insurance, pensions for childhood, sickness, and old age, and extended government control of prices, through public ownership or effective regulation, in essential industries. With a clearer vision of the difference between unemployment and poverty we may look beyond the complacent assumption that society as a whole can become richer only by working harder and that hard work will necessarily increase society's wealth. Most of the labor which men are paid to perform makes no more contribution to the wealth of society than does the arduous toil of the burglar, the forger, or the maniac. And in the long run the most important part of society's wealth is not the product of economic coercion but the flower of economic freedom, of intelligent idleness.

When we cut the link that binds unemployment to poverty there is little paradox left in the problem of unemployment. Men recognize instinctively that beetles, wars, and snowstorms are natural calamities. Men uncontaminated by economic sophistry are as quick to recognize that a "favorable" balance of trade is equally a calamity, that the performance of useless labor does not make society rich, that industrial sabotage is a crime, and that tinkering with money does not provide milk for children or shelter for the homeless.

For each of the cures of unemployment that our economic physicians have prescribed, an antidote is at hand. Beetles we are well on the way to controlling by virtue of the fact that entomological research is a government industry the products of which are distributed not only to those farmers who could afford to pay a monopoly or competitive price for insect removal upon their own land, but as well to their poorer neighbors whose calamities have the unfortunate property of being contagious. Snowstorms are perhaps more stubborn than beetles, but we can spare thousands of human backs by a more extensive use of snow-removal machinery operated under communal direction. The antidote for war is less obvious, but men are more likely to discover it when they look for it. Not the least of the ob-

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stacles to disarmament today is the assumption that the unemployment produced thereby is an evil rather than a good. And obviously one of the greatest drives towards war is the desire to secure foreign "markets" in "undeveloped" or "backward" countries—where there are masses of people so poor or so stupid that we can work for many years feeding, clothing, or poisoning them without getting anything in return except bonds.

The unnecessary employment caused by low wages can be eliminated from the social system only by a general raising of wage standards, achieved in part through a retention of present weekly wages and a drastic reduction of working hours. The employment caused by industrial sabotage we can easily cure when we recognize that industrial sabotage is a crime that includes robbery and murder among its effects and demands modes of social repression more severe than those we invoke against robbery or murder in their retail forms. An unfavorable balance of trade, i. e. a situation in which other nations work harder for us than we do for them, can easily be achieved by abolishing tariffs, discouraging the flotation of foreign loans in this country, and borrowing abroad ourselves. Such a program will result not only in an immediate increase in American unemployment and a material raising of American standards of living, but as well in the regaining by the United States of the international respect which it enjoyed before it became the world's creditor, and while it still received, as debtor to the rest of the world, the courteous consideration which prudent creditors pay to one from whom they hope some day to be reimbursed for past services.

The cure for rising prices, whether the rise be achieved by currency inflation, by the development of private monopoly, or by government acquisition and hoarding of agricultural commodities, is to be found in a program of price control in the interest of the consumer. Such a program will eliminate unnecessary labor by the suppression of the mushroom industrial growths that thrive upon abnormally high prices and cast the cost of their growth upon society (represented by claimants in bankruptcy) when price levels return to normal. A lowering of the commodity price level, at least in the realm of ordinary human necessities, means fewer stores, fewer salesmen, and less advertising and overhead. Finally, the lowering of the cost of living makes it easier for people to decline unpleasant jobs.

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A sound social hygiene, instead of encouraging extravagance and useless labor with "Buy Now" campaigns, would seek to encourage true economy by putting consumers in a position to know the real character of the things they buy.

A final point in the program for fighting employment will be the elimination of all restrictions upon the natural capacity of labor-saving machinery to replace human toil. Instead of tempting men back to the stony ground of abandoned Eastern farms, an enlightened society would see to it that a great many more farms unsuited for effective machine operation were abandoned. Instead of fighting the collectivization of medicine and other professions, an enlightened society would welcome the saving of labor attendant upon such collectivization and would see to it that the consumer received a fair share of the saving. Instead of waging quixotic battles in defense of the terrific overhead and inevitable inefficiency of the neighborhood store, an enlightened society would welcome and extend the advantages of large-scale planning in distribution.

The blessing of unemployment, source of all that is god-like in human life, lies at our feet. Are we, perhaps, too busy to see it?

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Personalism and Economic Security

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THIS essay is a frank attempt to present in a non-technical form some of the principles of the philosophy of personalism, a philosophy which seems to many minds to be a hopeful step toward truth.

Men need philosophy. As the sailor needs a compass, so Everyman needs a means of orientation, a point of view from which he can find his way in life. Unfortunately the need of philosophy does not necessarily produce either a desire for it or competence in it. As a rule men want more than they can pay for, and the price of philosophy is high. Who yearns to pay high prices? Hence men easily persuade themselves that they can do without philosophy. But there is no art by which they can persuade themselves that they can do without any trustworthy purpose, any fundamental security in life. Philosophy is, among other things, precisely a search for trustworthy purpose and fundamental security.

It is futile to affect indifference to the need of security. Worse than that, it is suicidal. The "depression" brings home to everyone the insecurity of employment and of investment in the present economic order. Those who have suffered are vividly conscious of what it means to have no secure income and hence no secure future. Yet few of the worst sufferers in the so-called "white collar class," to which most readers of *The American Scholar* belong, have yet reflected intelligently on the economic situation as a whole or inquired into the justice of a system which keeps millions of human beings in a perpetual insecurity arising from constant fear lest they lose their employment or suffer reduction in wages or discover tomorrow that the factory, the mine, the office, or the university has closed for the coming year.

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Blind optimism and fatalistic despair are equally absurd in the presence of insecurity.

It is true that mere economic security seems to be a low ideal for philosophy to deal with. But it is a fact that this low ideal has not been even moderately well realized by any large group of human beings. It is equally a fact that the economic problem can never be solved by a consideration of economic factors only; there is no "economic man," or economic law operating in a vacuum. There are living persons and societies, whose economic activities are affected by their other interests and by their environment.

In short, if we try to escape philosophy by confining ourselves to economics we find ourselves gradually driven to psychology, to sociology, to geography, to ethics, to esthetics, to religion, and back to philosophy again. By philosophy I mean not a social philosophy in the narrow sense, but a cosmic philosophy, which relates man's economic and other social activities to his view of everything real that in any way affects him, which means everything that is. Every constructive thinker has related the social order in some way to the cosmic order. This is equally true of Plato and Aristotle, of Zoroaster and Jesus, of St. Augustine and St. Thomas, of Hegel and Karl Marx. Philosophy offers the unifying perspective in which alone the economic problem can be treated fundamentally. Yet philosophy seems to add enormously to the difficulty of the problem. This, however, is only seeming, for the difficulty is not created by philosophy, but by the structure of the human mind and of the universe. Philosophy is simply the name that we give to an honest facing of all the difficulties and an honest search for a true solution. Are our statesmen and industrialists, our clergy and our educators, or indeed our poets and our philosophers, helping us to be philosophical in the world's crisis?

Security is needed; nevertheless it is not fatal to human hopes if absolute intellectual certainty is forever unattainable. Professor John Dewey has rightly told us that "the quest for certainty" is bound not to be successful. But the problem of certainty is only a part, and a relatively small part, of the larger problem of security. The dream of absolute and completely demonstrable knowledge is one that will never become a reality to beings constituted as we are. Must we also renounce the dream of security? Of a theoretically water-tight security, yes. Of the security that comes from the unity of intellectual pur-

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pose, no. What the world lacks today is spiritual integrity (in the literal sense of unity, integration). In casting off the errors and superstitions of the past we have become more interested in being thorough than in being discriminating. We have come perilously near to casting off reason itself.

Philosophy rests on confidence in reason. Without such confidence there is no unity of purpose, no spiritual integrity. Reason is the will to establish unity, relation, and system within experience, and thus to find truth, in a process of never-ending growth. If we abandon reason there is no way by which we can save two legs or the piece of an ear out of the mouth of the lion of irrationalism. If reason goes, philosophy goes, science goes, sociology and psychology go, all intelligent discourse goes. The world is a madhouse. On the other hand, if reason remains, it is inexorable. Reason will not be satisfied unless we face the whole of experience in a philosophical spirit, as well as examine special fields in the spirit of science. Great documents such as Plato's *Republic*, the Gospel of John, the Declaration of Independence, and Karl Marx's *Das Kapital*, are all essentially philosophical. To forsake philosophy is to give up the effort to be human.

The present is an age of the eclipse of philosophy. If one says "philosophy" today, the public replies, "Oh, yes! Psychoanalysis, behaviorism, relativity and quantum theory, cosmic rays and parsecs." But none of these topics is really philosophical for none has to do with the unity of our whole view of experience. The philosophers themselves are not doing much better. Instead they have tended to break down the unity of philosophical reason into separate technical sciences. Many so-called realists are substituting logical formulae and mathematical speculations for a concrete view of experience, while many pragmatists are satisfied with a provincial view of such immediate experience as happens to interest them, instead of seeking for an understanding of life as a whole.

Why is it that the unity of life has broken down into a mass of unrelated fragments? Man's grasp on the total meaning of his experience, we suggest, has weakened just because of the unprecedented progress which has been made in the mastery of one special part of his experience, namely, his sensations. Sensations are the point of contact with the physical world; and never before has there been such advance in knowledge of the physical world as now goes on daily. This

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knowledge possesses a high degree of certainty, is based on fruitful methods, is continually reverified with every experiment and calculation, and is ever developing. The overwhelming advance of science has led the majority to assume as a fixed article of belief the postulate that natural science, and it alone, can give us information about the external world.

Over against this fixed belief is the twofold fact that all of natural science is based solely on a rational interpretation of human sensations and that sensations are not all that there is to human experience. At present to undertake a complete survey of human nature would lead us too far; it is sufficient for our purpose to point out that every normal human being experiences ideals as well as sensations. By ideals I mean plans of action which the mind approves as desirable or obligatory. It ought to be clear that natural science itself would be impossible unless ideals of method, reason, and love of truth were applied to the facts of sense experience. It should be equally clear that there are other ideals, of beauty and of goodness, of brotherhood and service. No ideals are or can be mere sensations. It must be added that sensations and ideals appear in all normal experience, are inextricably interrelated, and are meaningless apart from each other.

The fundamental problem of life is the problem of the relation between sensations and ideals, between flesh and spirit, between science and religion, between raw experience and its control. The pairs which I have mentioned are, of course, not synonymous, but all involve the same fundamental problem in one form or another. The tendency of contemporary philosophy is, as I have intimated, to effect a clean-cut separation between sensation, on the one hand (interpreted, of course, by the ideals of scientific method), and ideals, on the other. Sensation is the key to reality, from this point of view; while ideals (except for the ideal of scientific method) are purely subjective manifestations of human nature, or plans of human action, which shed no light whatever on the structure or purpose of the universe beyond man. This is obviously a denial of the personal God of theistic religion, but it is more. In Professor Ralph Barton Perry's famous phrase, it "explicitly repudiates every spiritual or moral ontology." This does not mean that philosophers who hold that view repudiate ideals. On the contrary, they are almost invariably loyal in thought and practice to the highest moral and social aspirations of humanity. But in arriving

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at their idea of what is real in the universe beyond man they trust only their senses and (with varying degrees of emphasis) logic. If ever there were divided selves, it is these men. The brilliant and influential George Santayana lives in two realms, the real world of matter as revealed by his senses (and "animal faith") and the ideal world of imaginary essences. The two realms have nothing to do with each other. Bertrand Russell likewise lives in two worlds, the bleak world of physical nature, without value or purpose, and the noble realm of social reconstruction and idealism (although not all of his reconstruction is equally noble).

The root fallacy of "the modern temper," as Mr. Joseph Wood Krutch has called it, is that it builds its view of the outer world on a selected part of experience (namely, sensations) and consequently arrives at a conception of the nature of things which makes the rest of experience (namely, ideals) an unintelligible alien in the universe. Is it rational to suppose that the universe is such as to produce sensations in accordance with understandable laws, whereas it introduces ideals surreptitiously, by magic or miracle, into human life? If that is not rational, then is it not more rational and more empirical, fairer and more human, to derive our conception of the world beyond us from all the facts furnished by our experience, instead of treating a special group of those facts with partisan favoritism? Is it reasonable to assume that Dante had insight into the nature of external reality through his senses, but that all the values and ideals in *The Divine Comedy* are illusory subjective fancies? Are the spiritual heights to which Shakespeare rose less indicative of the objective nature of the universe than his perception that Stratford is on the Avon? Are the minds of Ibsen or O'Neill, Kant or Einstein, negligible data for the philosopher?

When one considers how much more there is to experience than the purely sensory processes, one marvels both at the absolute faith in sense knowledge which prevails today and also at the lack of curiosity on the part of many philosophers about the relation of the ideal life of man to the supposed nature of material reality. Yet there are reasons for pitting the realm of sense against the whole of personality as contemporary naturalism does. Statements about objects of sense experience are capable of being verified experimentally and can be formulated in approximately exact mathematical laws. These facts ac-

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count for the respect in which science is held, altogether apart from its practical achievements; but they do not warrant the conclusion that natural science is the only key to reality. It is regrettably true that some men of science have encouraged the erroneous idea that no proposition of any sort is to be respected unless it was reached and can be verified by the methods of natural science. Method worship is as much out of place in thinking as is any other form of worship. Since ideal values cannot be observed or verified by physico-chemical methods, one must either ignore the values or adopt other methods than those of natural science in dealing with them. It is true that our physical knowledge is more accurate and certain than most of our knowledge about ideals. But formal accuracy and certainty are not the chief goods of life; and human security is more dependent on the trustworthiness of our ideals than it is on relativity or entropy, for if ideals are objectively real, as Plato and Jesus held, then the entire physical universe might roll up like a scroll without affecting the fundamental security of human personality. If we value precision more than we value inclusiveness, or if we value fact more than we value reason, we shall acquiesce in the modern naturalistic mood.

What, then, is the relation of man's total personality to his world? Is his spiritual nature a foreign substance in a world the true structure of which is given solely in sensation? Or is it possible that the human personality is a "monad," as Leibnitz called it, that mirrors the universe, a microcosm reflecting the macrocosm? Can it be that the "material" aspect of the universe is under the control of reason and spiritual purpose, as sensation in a good man is controlled by reason and spiritual purpose?

When we face these questions about man's place in his world we find at least three possible answers. First, we may say that man's experience is all that there is. This is what philosophers call solipsism. But if we say this and say it consistently, we have no explanation of the changes which occur in experience. Everything is magic. It is, however, in these days of empirical philosophy, useful to remember that pure empiricism is necessarily solipsism. Secondly, we may go to the opposite extreme and say that man is utterly insignificant in the vast natural universe. For this, the naturalistic view, man's origin is an accident, his spirituality an illusion, his whole existence insecure. Thirdly, we may say that man's personality is an organic part of the

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whole scheme of things. Man is akin to his world, in living interaction with it, at home in it. This is the view which idealists, as well as others who are not idealists, have always held. One form of this view is called personalism.

No fair-minded person can well deny that each of the three views mentioned is grounded in experience and has a certain justification. But the difficulties of the first two are much greater than the difficulties of the third. The solipsist is subject to surprise by every natural phenomenon. The naturalist is subject to surprise by ideal values and the whole range of spiritual experience. The personalist (for we shall not speak of other types of idealism just now) is, of course, like everyone, subject to surprise by the future; but he has guarded his integrity and his security by taking into account the whole of present experience. The solipsist left rational interpretation out. The naturalist left ideal values out. The personalist includes the experience of the solipsist and the sensations of the naturalist while adding what each of them omitted.

We are now ready to consider briefly what personalism is, or at least personalism as held by the present writer. It starts with an undeniable empirical fact, the reality of individual personal consciousness. I have called this a fact; I may go further and call it the only given empirical fact, for all present facts of every kind are given in someone's personal consciousness. Professor Ralph Barton Perry has sought to discount this fact by calling it "the egocentric predicament"; and he rightly urges that idealism or personalism cannot be inferred from this fact alone. Over against "the egocentric predicament" must be set the principle suggested by Professor A. N. Whitehead, that "every fact lays on the rest of the universe the obligation of conforming to it."

Besides recognizing the immediate certainty of personal experience, personalism postulates confidence in reason and in any hypotheses necessary rationally to order and interpret experience. This gives the personalist his right to believe in other persons and in an objective natural order. He accepts, of course, the descriptions which science gives of the world of nature, and hence he views nature as an objective system of energy. When he relates the conclusions of science to the fact that his personal experience is a part of nature, constantly interacting with it, he concludes that the most reasonable hypothesis

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is to regard the energy of the physical world as a cosmic will, the conscious energy of a cosmic person, whose thoughts are laws of nature. But physical nature is, for the personalist, an instrumental and subordinate part of the total consciousness of the cosmic person, for that person is not only energizing within the laws of matter, but also purposing within the objective, ideal values which men gradually discover through a critical interpretation of human ideals. Eternity—the unbegun and unending time of all being—is a process of the ordering and controlling of cosmic experience by the will of the cosmic person. The Christian conception of a God who bears a cross and dies upon it to rise again, corresponds to the tragic reality revealed by past history and evolution, as well as by the present economic chaos. Personalism regards this reality as an eternal achieving of values through suffering, and as a creative evolution of inexhaustible variety and on countless levels of being.

This view belongs in the line of idealistic thought; it is no sudden novelty offered to the world. Plato and Plotinus, Berkeley and Leibnitz, Hegel, Lotze, Ward, Bowne, Hocking, and many others have contributed to it in one way or another. There is nothing static or dogmatic about it. Rather it presents a world of evolutionary energy, no less evolutionary because personal; it is a growing view, which expands with the development of science and experiment; it makes no appeal to any standard other than experience and reason. The chief fundamental difference between it and the fashionable philosophies of the day lies in its conviction that both ideal values and sensations are clues to reality, and that they can be unified either in man's subjective life or in the objective reality of the world only through concrete personal consciousness.

What has all this to do with the problem of security with which we started and the economic distress of humanity? Much, I believe. Economic values lie in the realm revealed to us by sensation. Only sense objects can be bought and sold or exchanged. The purposes and ends of life lie in the realm of ideal values. If the world of sensation—the physical and the economic—is the only reality, as naturalism holds, then man's purposes are forever insecure, his ideals forever at the mercy of the unideal. But if man's highest and best purposes are discoveries of the ideal purposes of the cosmic mind, then man need never lose courage. The world may be and doubtless is tragic, but it is

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not irrational. The ideal values are based on the eternal structure of the cosmic mind. This perspective does not, it is true, solve the problems of economics; but it does furnish a ground for hope, a stimulus for effort, and a standard of value which other views do not furnish. If the whole universe is a society of persons, then the struggles of the earthly society to achieve justice and to bring to every individual person opportunity for the highest value of which he is capable, are part of the purpose for which the entire universe exists, and economic values are to be tested solely by the kind of persons and societies they produce. This removes the economic problem from the realm of drudgery and materialism into the realm of eternal value and furnishes an objective basis for programs of social reconstruction.

Is a "New Deal" Possible?

WILLIAM KAY WALLACE
Historian

WE have just inaugurated a new President of the United States who has promised us a "new deal." Will it be possible for Mr. Roosevelt to keep his promise? With all of the best intentions in the world, will he be able to do very much towards fulfilling the pledge which I have no doubt was made in all sincerity, and lies very close to his heart? This question in no wise reflects on the attempts that our new President may be expected to make to bring about an alleviation of the present economic distress and stem the rising tide of social unrest. I have no doubt that to the limit of the powers vested in him under the Constitution he will make use of all of the various remedies which may be expected to afford a temporary rise in our economic prosperity. But these remedies, even if seemingly successful, can only serve as palliatives, can do no more than postpone the ultimate reckoning.

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Our trouble has not been so much that President Hoover was personally at fault or responsible for the failure to stay the destructive effects of the present depression. Nor will it be the fault of Mr. Roosevelt, following the well-worn ruts of constitutional practice, if by and large he does not make a much better showing. The trouble lies, not with the individuals in high public office but with the mechanism of our government under the Constitution. If Mr. Roosevelt really means what he said when he promised us a "new deal" he must show the way to an overhauling of the government machinery.

The Constitution of the United States is the source of the authority and of the powers vested in our Federal Government. It is the charter that gives validity to the laws of the land. The time has come for us to reexamine this charter in order to ascertain whether it is adequate to the needs of the industrial world in which we live today.

Most of us have been taught to believe that the Constitution is in the nature of a Holy Covenant, something sacred that must not be tampered with; or that if we should attempt to modernize it, all we could possibly do would be to write in an amendment or two in an effort to revamp it to meet existing needs.

As a matter of fact and of history, the Constitution was intended, by the Founding Fathers who wrote this charter of government, to be nothing more than a useful expedient suited to the needs of the moment. Thomas Jefferson animadverted upon the advantage that would accrue to the people if the Constitution were rewritten at least once a generation. All of the framers of the Constitution who attended the Constitutional Convention at Philadelphia in the summer of 1787 were of the opinion that they were framing an instrument of government to meet the emergency which had arisen as the result of the collapse of Federal authority under the charter known as the Articles of Confederation.

The machinery of government set up by the Constitution is based on ideas of natural laws, natural rights, and a social contract. The "rights of man," "the sovereignty of the people," and other high-sounding romantic slogans express the political philosophy embedded in our charter of government. But all of these concepts have since been wholly discredited by the onward march of a more scientific and realist approach to the solution of the problems of social life.

We find in the Constitution a dual purpose: on the one hand to

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guarantee the so-called unalienable natural rights of the individual against the encroachments of government; on the other to form a more perfect geographical and political union of the thirteen states which the Articles of Confederation had failed to achieve.

It is pertinent to recall that at the time our Constitution was being written only the most rudimentary knowledge of psychology was available. It was held as proven that man is endowed with certain mental faculties, separate and distinct one from the other like so many watertight compartments. The government that was set up reflects this rigid point of view. And though all idea of this so-called faculty psychology has long since been discredited, our Constitution, the charter of our government today, still stands as the one unimpeachable source of authority. Or again, rights rather than responsibilities were held to be of primary importance. The law as a political decree was held to be an end in itself. Politicians were the high priests of the State, and the State was looked upon as the "mortal god."

What do we find today? We are concerned with a different set of problems. Those "unalienable" political rights of the individual that haunted the minds of the men of the eighteenth century have lost all significance. The "more perfect union" which the Constitution was framed to assure has been attained. Political questions of individual as of state's rights have sunk into the background. Economic and social questions have come to the fore. During the one hundred and forty-five years that have elapsed since the Constitution was framed not only has scientific research revolutionized our ways of thinking but a new code of social conduct is taking shape. Ideas of social responsibility and social welfare have usurped first place, with a consequent revision of our methods of dealing with the problems of social life. The rigid individualism of the Constitution under which our political machinery was developed is being replaced by the new and broader social point of view. We are no longer content to philosophize about the ills of society but are eager to apply a remedy. Who today would listen to anyone who in an attempt to settle the unemployment problem should declare that men must be content "to obtain what by labor can be obtained and when they find, as they commonly do, the success disproportionate to the endeavor they must be taught the consolation of eternal justice." Yet these are the words of the great Burke, the political preceptor of the men who framed our Constitution.

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The time has come for us to scrutinize more closely our instrument of government—the Constitution. If we do so we shall find that it has outlived its usefulness. Our methods of government under the Constitution are a barrier that is impeding social development. The Constitution no longer fulfills a useful purpose in present-day social life. The Constitution reflects the needs of a primitive frontier society in colonial America. It has from time to time been amended, but these amendments must be looked upon as so many patches on the leaky instrument of government. In a sense they are attempts to modernize it, or rather to make it possible for the Constitution to stand the stress of the high pressure civilization we have developed in the course of the last century and a half on this continent.

The Constitution enshrines in precise, coherent language the ideals of political liberty and equality, the doctrines of the rights of man and sovereignty of the people, and other loose verbiage of the Declaration of Independence. If we are to be able to meet present-day problems squarely, if we are to make possible the smoother functioning of our industrial society without having to go through a period of revolutionary chaos, then the sane and sensible thing for us to do is to consider and weigh maturely the advisability of drafting a new Constitution.

How is this to be done? The outstanding contribution of the American people to the theory and practice of government is the belief that the framing of a charter of government lies within the province of the people. It is not a function of government. Our elected or appointed officials, whether President, Congress, or Supreme Court, can as such have nothing to do with the actual drafting of a new Constitution. To be sure, if President Roosevelt were to take the initiative in this movement such an act would facilitate immensely the attainment of our purpose. And it is only by such leadership that he can prepare the way for a "new deal." He would in fact have the authority of the precedent set by the Father of his Country, should he feel constrained to look for an historical precedent.

When our first charter of government, the Articles of Confederation, had plunged the country into a crisis in some aspects not unlike that with which we are confronted today, Washington took the lead and declared that "something must be done or the fabric will fall, as it is certainly tottering." It was Alexander Hamilton who issued the

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call for a constituent assembly that was to frame a new Constitution and Washington who was elected the presiding officer of the Constitutional Convention that assembled at Philadelphia in May, 1787. "My wish is," Washington declared, "that the Convention may adopt no temporising expedients but probe the defects of the Constitution to the bottom and provide a radical cure." Roosevelt today could find no words better suited to the occasion.

De Tocqueville sets forth as follows the situation that confronted the United States nearly a century and a half ago:

> The Federal Government condemned to impotence by its constitution . . . was on the verge of destruction when it officially proclaimed its inability to conduct the government and appealed to the constituent authority of the nation. . . . It is a novelty in the history of a society to see a calm scrutinizing eye turned upon itself when apprised by the legislature that the wheels of government are stopped; to see it carefully examine the field and wait patiently for two years until the remedy is discovered which it voluntarily adopted.

Such was the method of the "new deal" in the days of Washington. Will history repeat itself? Will his thirty-second successor in office be big enough for the task?

But we must also recall that times have changed and that when we do call a constitutional convention its delegates cannot be composed of men of the stamp of the political hacks who for the most part make up our legislative bodies today. A constitutional convention today must represent all of the diverse elements of our social life.

As things now stand a constitutional convention that would draft a new instrument of government would have the backing of more than a radical minority. Once drafted in accordance with the needs of present-day industrialism, it would be accepted with acclaim by an overwhelming majority. But if such steps are not taken in time, then the only alternative is an armed revolution at a no distant date.

The calling of a constitutional convention and the drafting of a new instrument of government is a revolutionary act which would mean the overthrow of the government of the United States as now constituted. The principal purpose of revolution is to destroy the sources of power by shattering the foundations of the old system. Usually this requires the use of violence. But is this necessary in the

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United States today? Not if we take the matter in hand promptly. As I see it, the old ideas on which our existing Constitution rests, those political doctrines of individualism which form the nucleus of our constitutional system, those arbitrary assumptions regarding the ultimate ends of society, the competitive ideal and an egotistic "pursuit of happiness" are already discredited in the minds of millions of men and women who are eagerly awaiting the signal to proclaim the new social code.

A revolution of some sort is inevitable. The question is: will it be guided by those in posts of power or must it be forced upon them by deeds of violence? What an armed revolution would mean in a country like the United States baffles description. We have grown so accustomed to the smooth functioning of our industrial life that any serious dislocation for more than the briefest period would inevitably mean death by starvation for thousands. The havoc wrought by the Russian Revolution and the Bolshevist régime would be child's play in comparison.

It is essential at the present juncture that we cultivate the revolutionary tradition which is part of our historical heritage. We must learn to think in terms of revolution, for only in this way can we determine whether "ballots shall prevail over bullets." Bullets may or may not play a part, depending on how clearly we envisage the task of the revolution ahead of us. But let us not mince words. It is only by taking a stand on the side of revolution that we can enter into contact with the new world that is emerging.

A very definite break with the past is required. But the historical continuity of the American tradition is maintained in reviving once again the revolutionary spirit that inspired our own Founding Fathers. We need no borrowings from abroad, whether from Marxism, socialism, communism, or fascism, to inspire us. If we would but discover them the American revolution of today has rich sources of its own, lying within the orbit of the American tradition of self-help and self-government—if we would but give to these terms a broader meaning than the narrow individualism with which they have been crusted over.

The technique of industrialism, the doctrines of efficiency and a scientific world view, are all part of the present-day American scheme of things that is essentially *social* and not *individual* in its implica-

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tions, and in framing our new Constitution these must be taken into account. But in so doing we must be mindful of the American tradition of individualism which is more deeply rooted here than anywhere in the world. Individualism is still a vital force in American life today. But its vitality is in the nature of a ceremonial activity, not of an underlying basis for the motivation of government.

This is not the place to pursue further this line of thought, but I would leave it with you as part of your revolutionary thinking. In conclusion I would outline briefly what seem to me some of the essentials of a new Constitution that would make possible a "new deal."

I. *The Guarantee of Economic Liberty*

This requires the framing of a code of economic rights.

Our new Constitution must recognize that every citizen has certain inalienable economic rights, just as our existing Constitution presupposes certain inalienable political rights.

These economic rights include:

1. The right to a subsistence wage based on the mechanical productive power of the community—not on the physical man power of the individual.
2. The right to economic security.
3. The right to education.
4. The right to leisure.

It is upon these fundamental rights that the new conception of economic liberty is based.

II. *The Guarantee of Social Security*

The State must henceforth not merely protect the public safety and tranquillity of the citizen but must assist and safeguard him in what has hitherto been held to be the domain of his personal and private affairs.

Social security must replace the uncertainty and insecurity which are the common lot of the vast majority under our present haphazard method of government which considers the individual only indirectly. The personal well-being of the individual must be made the first concern of government.

III. *The Guarantee of a More Efficient Government*

A complete rebuilding of the present-day political structure of the State is essential, for our state structure is antiquated and obsolete.

The burden of taxation is so great and the public income so wastefully apportioned that the State has been brought to the verge of bankruptcy.

Our new Constitution should provide for a state system, based upon

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present-day needs of the national community, and in keeping with the technique of modern industrial life.

I would suggest:

Nine regional states in place of the present forty-eight;

Each regional unit to have four to six elected representatives, these to form what we may term a Board of Directors of the United States;

The National Board to be endowed with national legislative functions to insure uniformity of legislation in all matters of national concern;

The National Board to select among its members a President endowed with full executive authority and responsible to the Board of Directors; the Board also to have full power ultimately to appoint all national, federal, judicial, and other officers from the ranks of an efficiently trained civil service;

A similar system to be instituted in the nine regional states.

I have not space here to go into all of the details of methods of election, or even to mention any way whereby the government so constituted may be expected to function. Nor is it intended to offer these suggestions as any rigid formula that will of necessity be followed. They are intended rather to arouse the interest of readers and to serve as a guide to their own revolutionary thinking.

IV. *The Guarantee of Personal Liberty and Property*

Our existing Constitution is chiefly concerned with the protection of the private rights and personal property of the individual in keeping with the philosophy of individualism and Rousseau's romantic notions of a social contract.

Today we require a new definition of personal liberty and of property in keeping with the industrial civilization and the scientific concepts of our times.

Personal liberty must be reinterpreted in a social sense. The concept of personal liberty must be so widened as to include the economic rights and privileges outlined above.

In the same way a new definition of property is required. Whole categories of property hitherto defined as private must be recognized as public property.

Private property will be left as the field of individual initiative and invention to stimulate the creative genius of all of the people. Outside this limited, personal field, property will be defined, in accordance with its social use, as public property; and ownership will no longer be its distinguishing characteristic.

The individual as such will not be deprived of the incentive to accumulate wealth. But the opportunities will be greatly restricted in that the possibilities of gaining a personal fortune by speculation, inheritance, and so forth must be prohibited until such time as the smooth working of a planned national economy will automatically remove from the fore-

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front of the social picture all such conceptions of private rights or private property inherited from a pre-industrial society. Here we may catch a glimpse of a new freedom, a new sense of personal liberty for the individual.

V. *The Guarantee of a Planned National Economy*

A planned economy is the super-structure of the new state system—not, as some would have us believe, its foundation. The foundation is to be sought in the new concept of property and personal liberty. Today we are faced with the disintegration of an economic system that has outlived its usefulness. The financial technique and the credit system of the world, both based on the older concepts of private property and the profit motive, are strained to the breaking point.

In the process of a thoroughgoing reorganization of our economic structure the State must play a leading part. The days of *laissez-faire* are past. As part of its governmental functions the State must take in hand the organization and control of all productive enterprise, devise means for coordinating these enterprises, and assume the rôle of supreme economic arbiter. In order to do so the government must be invested with new powers and new functions. It is in this field that the most arduous tasks of government lie today. It is here that creative leadership is required, free from all of the old notions and traditions of property and private rights.

I have outlined here only very briefly a few of the main features for which we must find room in our new Constitution. There are many others that require thoughtful consideration if an adequate solution is to be arrived at; but they are one and all part of the revolution that is taking place today. If we are to be able to cope with the situation it is essential that we become accustomed to this revolutionary way of thinking. Here the new leadership takes shape. Here and here alone must we look for a *new deal.*

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Editorial

A Defect in Democratic Procedure

In response to an invitation from the President a group of citizens met in Washington on January 5 and 6 to consider the current crisis in education, a crisis which threatens the closing of schools, the destruction of morale among the educational forces, and the loss of educational opportunity for thousands of children.

The purpose of the conference, as expressed in President Hoover's opening address, was that of considering how to make the adjustments in education costs which the depression has rendered imperative, while at the same time avoiding encroachment upon the opportunity of the child, through the schools, to develop adequate citizenship. The President vigorously demanded right of way for the American child and suggested that sufficient retrenchments be made in other directions to assure the efficiency of the schools during the depression.

The conference accepted the President's point of view as to the fundamental importance of an adequate educational opportunity for all children. The solidarity of conviction on this underlying thesis was perhaps the most significant aspect of the gathering, composed as it was of a minority of professional educators and a majority representing national organizations in various fields.

Although it was planned as a working conference, and it was specifically instructed as to its task by the President, the results were only moderately satisfactory. An outline of suggestions had been distributed in advance and some supplemental documentary material relative to educational conditions and finances was issued at the opening session. The difficulty was two-fold: first, the program was in some respects too general in tone; second, the members of the conference were not sufficiently familiar with the detailed conditions of school operation to discuss with profit the specific problem which they had been assembled to consider. Consequently much of the debate lacked incisiveness. It did not, and under the circumstances could not, cut to the heart of the problem of genuine economy in school operation.

The conference therefore dealt principally in generalities. The proposals for greater economy and efficiency in school operation looked toward long-range adjustments rather than to measures applicable in the immediate emergency. It was inevitable, also, that the present plight of the educational system should be visualized as part of the broader economic and fiscal emergency. An undertone of disappointment over the results of the discussion was evident in the remarks with which the chairman, Ray Lyman Wilbur, Secretary of the Interior, closed the confer-

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ence. He had suggested that the conference recommend giving preference at this time to schools over highways. Since this suggestion was not definitely approved the members were reminded that they faced the obligation of fighting, in their respective communities, for some equally practical measure that would protect the educational birthright of those children who must receive their schooling, if at all, during these trying times.

That the outcome should be disappointing was, in the writer's opinion, a foregone conclusion, for this conference was simply another demonstration of the sadly defective implementation of our democratic processes. Everyone who attended the conference believed in the great social importance of education; but no one could suggest, offhand during the meeting, acceptable, specific means of reducing and controlling the cost.

This has become a familiar experience. Conferences and commissions galore have considered all manner of subjects of importance to our well-being as a people. They have usually been assembled too late, and they have ordinarily lacked the factual background essential for specific action. The monotony of their resort to generalities in the absence of a technique for coming to grips with essential facts and conditions has brought into disrepute the conference and commission method. Legislative bodies do no better, for they are, in this respect, simply standing conferences, quite as deficient in their facilities for determining the proper course of action as is the ordinary temporary conference. The apprehension with which legislative sessions, national and state, are viewed is testimony of this deficiency.

A large scale economic depression necessarily emphasizes this defect in our democratic procedure, although it is always apparent. The clearest and most insistent challenge of the depression is that we shall develop a technique for the intelligent guidance of legislators and administrators in their efforts to realize and apply the popular will.

Harley L. Lutz,
Professor of Public Finance, Princeton University.

. . .

Φιλοσοφία Βίου Κυβερνήτης

If "Love of wisdom, the helmsman of life" had always been the motto of men, we might not be in such individual and collective depression. The day of storm did not find among us—politicians, professional and business men, scientists, authors, artists—a pilot with vision far enough and wide enough to keep the ship of state off the rocks.

Not only materially by the invention of means to fabulous wealth and enervating ease, but also ideally by the surrender of old beliefs which had fostered dominating ideals and hopes and fears, man has had set free in himself the strong innate animal tendencies, the irrational inclination to live for the present. The future for man has become certain annihilation, or at least so shrouded in uncertainty

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that eating, drinking, and being merry recommend themselves even to the thoughtful. Formerly, one of the most potent molders of conduct was the philosophy embraced by the prevailing religious faiths. The worst of men behaves a little differently when he is convinced of, or takes for granted, the existence of an omnipresent, omniscient, omnipotent God whose righteous Will is revealed or ascertainable; when he believes that conformity with this Will means eternal bliss, whereas violation leads inevitably to everlasting hell. Whether good or bad, such beliefs did only yesterday guide life.

Practical measures, however, cannot guide life. They point to means, not ends. One knows *how* without knowing *why*. Moreover, entranced by the marvelous physical powers of this age, many a learned man has so lost sight of his own inner nature as to evolve a philosophy of materialism which also, it is true, does guide life —a sorry paradox. Many an otherwise good scientist has had his vision so monopolized by test tubes, balances, equations, and predictable events that he has lost sight of the existence of that most certain and significant of all facts, the actuality of awareness, of knowing, of choosing and creating. We are prone to separate man from nature and then attempt to explain him in terms of this impoverished nature. The fact of consciousness is the most tremendous of all facts. How could life, awareness, be a product of, or emerge from, an inanimate, insensible, dead material, however cleverly organized? How can life be defined or explained in terms of something else—numbers, electrons, what not?

The vitality we know in awareness must be an intrinsic quality or attribute of the stuff of which you and I are made—a substance of which, the scientist says, all the rest of the universe is likewise composed. Granting this, we are, then, a true sample of reality, a test tube of sea water revealing the nature of the whole vast ocean. We know what it feels like to be a bundle of electrons. Electricity, therefore, or ether, or whatever the universal substance is to be called, is not lifeless matter but vital substance.

Specialists, we must admit, are among the world's most glorious products. A general knowledge of scientific method and the many special realms of knowledge is essential to true culture. But specialization is only beginning to emerge from a youthfulness characterized by a boasted superiority to general culture as a guide of life. The great scientists, philosophers, and leaders of men have for the most part insisted upon the importance of understanding the inclusive relationships. They have enjoyed that comprehensiveness of mind which takes account of value as well as fact, of quality as well as quantity, of end as well as means, of life as well as space-time.

America and the world need most of all some guiding beliefs about the nature and destiny of man and his universe. Let every man beware of the narrow view. Only that wisdom which has studied the charts, however incomplete, of every sea can wisely be entrusted with the helm of life.

William Allison Shimer.

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Mr. Flexner's Vineyard

KEMP MALONE
Professor of English, Johns Hopkins University

THE prospective opening of an Institute for Advanced Study, headed by the redoubtable Abraham Flexner, makes timely a survey of the vineyard which Mr. Flexner and his men purpose to cultivate. The vineyard I speak of is the higher learning in America, and its grapes in the past have been more productive of vinegar than of wine. Such, at least, is the common complaint, although the critics, brought to the vats, fail to agree in their identification of the liquors. And in truth the troubles of our American institutions of learning are largely due to their efforts to serve two masters, of whom the one calls wine what the other calls vinegar. This inner conflict, let me hasten to add, is something comparatively new. Until the Johns Hopkins University opened its doors in 1876, our colleges (universities did not exist except in name) were content to give their students a superficial acquaintance with the traditional academic subjects, and to offer the conventional training for the so-called learned professions. Research might be carried on by an individual professor here and there as a private hobby, and an occasional student might do "post-graduate" work and even write a doctor's dissertation, but such activities nowhere shook the hold of the schoolmaster, whose methods and point of view remained dominant among the teaching staff, while the students, treated like schoolboys, with rare exceptions felt and behaved accordingly. In sum, our colleges took it to be their function to pass on to a select group of the new generation, by drill and discipline, an inherited body of genteel knowledge and an inherited cultural attitude.

With the foundation and rapid rise to eminence of the Johns Hopkins University, a discordant element was introduced into the American academic world. The Baltimore institution had as its chief feature a graduate school, devoted to research and to the training of research workers. There was, besides, an undergraduate college but from the beginning the undergraduate work was subordinated and it was the graduate students, not the collegians, who set the pace and gave to the new university its characteristic atmosphere. This peculiarity, which has persisted to the present day, remained unique, for an achievement easy enough in a new institution headed by a Gilman and staffed by men like Gildersleeve, Sylvester, and Rowland proved impossible elsewhere; the collegiate tradition was too strong to be uprooted, and no serious effort to uproot it was ever made. Nevertheless the intellectual ferment stirred up in Baltimore

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could not be kept from spreading and in fact all our leading colleges were badly bitten by it. Professors interested in research found the educational authorities less unsympathetic and in some cases fully aware of the importance of the new movement. Better facilities were provided for advanced study. Graduate schools grew less dependent upon the colleges to which they were attached and a few universities in name became universities in sober earnest, despite the collegiate tradition which clung to them. In such institutions, if in no others, the Hopkins ferment brought about a serious division of allegiance, and everywhere the teaching staff tended to fall into two groups which had little in common: on the one hand, the research men; on the other, the upholders of the old order of things. The former had in the graduate students their predestined disciples and allies, while the latter sought aid and comfort among the undergraduates, many of whom had come to college for reasons other than intellectual curiosity. A struggle followed which, with various shifts of ground, has been going on ever since, and which has left its mark on every American university (the Johns Hopkins of course excepted). And the end is not yet.

But Gilman and his men by no means confined their efforts to research and graduate and undergraduate teaching. From the beginning they carried on, besides, a type of activity now known as extension work. The general policy of the new institution in these matters has been put in words which Gilman quoted with approval: "The aim of the Johns Hopkins University was to benefit everyone in Baltimore." This feature likewise of the Johns Hopkins was widely imitated. Certain urban universities in particular, moved by crying local needs, undertook extension programs on a scale undreamed of in Maryland, and extension work came to be looked upon as an important if not indispensable part of the activities of an American university.

It followed from the very nature of the Baltimore foundation that the methods of instruction characteristic of its professors had little in common with the kind of teaching customary in the America of 1876. The Hopkins student, whether graduate or undergraduate, was regularly treated, not as a schoolboy, unwilling swallower of intellectual pills, but as an individual seeker after knowledge, a man with his own intellectual problems, problems which he had to solve for himself although his professors were at hand to help him when help was needed. Such a student attended few set courses (since few were offered), and it was his chief concern to map out and pursue, in collaboration with the professors of his choice, a program of study fitted to his personal requirements. This loose, flexible, easy-going system (or lack of system) still prevails, with certain modifications, in the university of its origin, but, unlike the Hopkins innovations discussed above, it has found little favor elsewhere unless indeed the elective system of Eliot be reckoned an offshoot. Our teaching, it is true, now derives only in part from the schoolmaster but administration has grown great and has turned the typical American univer-

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sity into a highly organized and regimented factory for the mass production of bachelors, masters, and doctors—a state of things as far removed from the individualism of the Johns Hopkins as could well be imagined.

In the foregoing survey of our vineyard of higher learning I have paid particular attention to the Johns Hopkins University, not only because of the intrinsic importance and revolutionary influence of its educational activities, but also because the new Institute for Advanced Study is in some sort a Johns Hopkins product. The Director of the Institute, Mr. Abraham Flexner, was himself trained at the Johns Hopkins, and, what is more significant, his present undertaking, in its larger aspects, must be interpreted as a continuation of the educational movement which Gilman started in 1876. The disciple has taken up the task which his master left unfinished. It was Gilman's great achievement to make the graduate work central, the undergraduate work ancillary, in the academic scheme of things. But he succeeded in doing this in one institution only, the university which he himself headed. Everywhere graduate studies were enormously stimulated by the example of Baltimore but nowhere else were they able to gain the first place. The undergraduate tradition (which has always been closely linked with dilettantism) would not down, and its continued supremacy served perpetually to dilute and attenuate such intellectual life as was able to maintain itself in the hostile or, at best, neutral atmosphere of the campus. The experience of the last fifty years has made it abundantly manifest that university work is out of place in a collegiate environment, and that American higher education took the wrong turning when the colleges of the country began the process of adding unto themselves graduate schools and dubbing themselves universities. Scholarship would have been better served if the colleges had let well enough alone and left it to new foundations, like the Johns Hopkins, to cultivate the university field.

Of such a nature is the foundation which Mr. Bamberger and Mrs. Fuld have so generously established, and although for the present it goes under the modest title of Institute, a new American university is obviously in the making. The choice of Mr. Flexner as Director indicates quite definitely what the policy of the foundation is to be, for Mr. Flexner's views on educational matters are well known. The Institute begins with a graduate school, as the Johns Hopkins began, but it departs from its model to this extent, that no undergraduate work is provided for or contemplated. In other words we shall at last have in America a university in the strict (or Continental) sense of the term. To the casual observer it may seem odd that we have had to wait so long for a type of institution so familiar abroad and so badly needed at home, but in fact there is nothing to marvel at. Some cynic has observed (not without point) that American millionaires and foundations make it a practice if not a principle to bestow their money where it will do the least good, and if up to the present time the United States has done without a true university the explanation is simple. Nobody has given

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the money to found one. The closest approach to a true university which we have ever had, the Johns Hopkins, is also the most poverty-stricken of our institutions of higher learning, and when a few years ago it was proposed to turn the Johns Hopkins into a university in the strictest sense, by doing away with the undergraduate work and the bachelor's degree, the money needed to put the project through could not be got together. The opening of the Johns Hopkins Graduate School in 1876 is admittedly the most notable event in the history of higher education in America, but this graduate school since its foundation fifty-seven years ago has never once received a gift of any magnitude. In view of such facts as these one can only rejoice that the philanthropy of Mr. Bamberger and Mrs. Fuld has been informed with an intelligence so exceptional and a discrimination so rarely met among our fellow-citizens of great wealth.

In one particular, however, the conditions attached to the gift are open to criticism. It is prescribed that the Institute be located within the State of New Jersey. Whatever the motive for this limitation, the effect is bound to be unfortunate if not disastrous. The comparatively limited financial resources of the Institute obviously make needful a location within easy reach of a great library, and one thinks at once of Washington, where in the neighborhood of the Library of Congress and the Folger Library a university might make its home to great advantage and without sacrifice of its individuality. But because of the restriction to New Jersey the Institute has been forced to take quarters in Princeton where it is set in the midst of an undergraduate atmosphere delightful, indeed, but all too likely to give to the new foundation the very flavor which its director has been at such pains to avoid. If an institute for advanced study may without danger be placed in an undergraduate setting then the present Institute loses its educational significance; and it is to be hoped that before the Institute finds a permanent home it may win the privilege of seeking for itself the location best adapted to its character and purposes, wherever that location may turn out to be.

The first department of the Institute to take shape is that of mathematics. The propriety of putting this fundamental branch of knowledge in the place of honor is indisputable. For a foundation, moreover, not abundantly supplied with money, mathematics has, besides, the advantage of requiring no expensive equipment. But the really important thing is that Mr. Flexner was able to secure as his Professors of Mathematics four of the world's greatest authorities in the mathematical field—Albert Einstein, Hermann Weyl, Professor of Mathematics at the University of Göttingen, James Waddell Alexander, Professor of Mathematics at Princeton University, and Oswald Veblen, also Professor of Mathematics at Princeton University. The appointment of the first has given to the Institute a veritable flood of newspaper publicity, and has caused much shaking of academic heads, in which the suspicion will not down that Mr. Flexner has both eyes firmly fixed on the front page. But time may be counted on to reassure these doubting

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Thomases. It is more than likely that Mr. Einstein's will be not only the first but also the last appointment capable of arousing the interest of the general public. His case is the exception that proves the rule—and the rule is that the scholar with a great popular reputation is a scholar whose work has little scientific importance. It will be time enough to accuse Mr. Flexner of news-mongering when he offers a chair to a professional popularizer.

The appointments which Mr. Flexner has made in mathematics tell us what he is about. He purposes to bring together a staff of great men who may be expected to attract students of promise. His standards will be high and mediocrity will not be given entry. The Institute will be an intellectual community, devoted to the search for truth, a group of choice spirits among whom scholarship will flourish. In such an atmosphere, under conditions so favorable, research will be stimulated to a degree not elsewhere possible and great achievements may be looked for. The success, moreover, of the undertaking will lead to the establishment of other institutes of a like kind with a consequent general quickening of American intellectual life. Such (as I see it) is Mr. Flexner's vision, and it is indeed a noble one, worthy of all praise. Success to him and to his pregnant enterprise!

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Law for the Layman

THROUGH its section of Legal Education and Admissions to the Bar under the chairmanship of John Kirkland Clark, the American Bar Association, under the auspices of the National Advisory Council on Radio in Education, Incorporated, of which Robert A. Millikan is president, is sponsoring a series of radio broadcasts on Sunday evenings at 6 o'clock Eastern Standard Time over the Columbia network. The purpose is to acquaint the layman with what is being done by the legal profession in legal reform legislation, particularly in matters pertaining to the Court and the individual. Those who are interested, even though they missed the February and March lectures, may have an opportunity during April and May to hear lectures on such phases of the subject as *Reforming the Law Through Legislation, Restating the Law, How Far is a Judge Free in Rendering a Decision?* and *Selecting Judges*, by Newton D. Baker, John W. Davis, Professor Felix Frankfurter, Judge Learned Hand, and others of similar standing in the legal profession.

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The College Art Association

AUDREY McMAHON

THE College Art Association* is today a very different organization from that founded twenty-two years ago by a small group of college professors, who, having received their education in London, Berlin, Paris, and Venice, realized when they returned to the United States how great were the handicaps

*137 East 57th Street, New York, N. Y.

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here for an education in the history of art. At that time only a few institutions, for the most part in the East, included such a study in their curricula. Even where it was included the courses were for the most part elementary and research in the field was practically unknown. It seemed futile to develop graduate students who, after graduation, would have no opportunity to make constructive use of their knowledge.

From modest and academic beginnings the Association has developed into the present-day organization which has for its aim the furtherance of art appreciation. *The Art Bulletin* which came into existence nineteen years ago and is now in its fourteenth volume is considered the leading periodical in the field in this country and compares favorably with the research and archeological publications of Europe. It may be found in most libraries, not only in the United States but abroad, and by universities and colleges is considered a reference source.

Parnassus, which with an increasing circulation now enters its fourth year, is a less technical publication, conveying news and critical information from an unbiased point of view. This publication aims to bring before a wider public than can be reached by *The Art Bulletin*, a series of candid articles on art activities of the day. Among its contributors are such well-known writers as Francis Henry Taylor, Alfred H. Barr, Horace H. F. Jayne, Louis Reau, Eustache de Lorey, John Shapley, M. S. Villard, Kurt Blauensteiner, Charles R. Morey, and Elizabeth Luther Cary. With the exception of *Eastern Art*, an annual also sponsored by the College Art Association, it is the only art periodical which devotes space to art of the Far and Near East.

Five years ago a program of traveling exhibitions was inaugurated. During the first year four exhibitions of contemporary American paintings were circulated, on an experimental basis, to eighteen colleges. The immediate demand was overwhelming, and now the Association circulates approximately 50 exhibitions a year to more than 300 institutions. These exhibitions include paintings, watercolors, sculpture, graphic and applied arts, and arts and crafts. They comprise works of old masters and of contemporary painters of conservative tendencies as well as of students and of the more modern school. Museums, private collectors, artists, and dealers contribute to these exhibitions. The College Art Association, which is strictly non-commercial, receives no profit from sales. Small exhibitions for colleges with limited space are specially organized as well as large museum shows. The average exhibition of oil paintings contains 40 to 50 examples, representative in style, size, and period of the work it seeks to present. A lecture and film service is also available.

A Texas institution writes as follows: "It is my belief that nothing can take the place of actual contact with the original expression of the artist. I should feel that sustaining food had been denied us if the exhibits were withdrawn." From Canada we hear that "Since many of our students have seen nothing but modern painting, these exhibitions have been the greatest help to the instruc-

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tors in demonstrating the trend of contemporary art movements," and also that "The traveling exhibitions are the means of keeping the subject of art alive and up-to-date in outlying communities." A Missouri institution writes: "The exhibitions of paintings, sculptures, and prints which you have sent us have done more to stimulate the love of art in this large section of the Middle West than could be accomplished in many years of ordinary study, and they have reached an immeasurably greater number of people."

With the "International," which the College Art Association brought to the United States for the opening of the new building of the Worcester Museum on January 6, 1933, the Association planned a climax to its exhibition activities. This exhibition, which had its metropolitan showing in New York from February 8 to 26 at Rockefeller Center, contains approximately 350 examples of the work of outstanding contemporary artists. The paintings come from England, France, Germany, Spain, Italy, Belgium, Holland, Austria, Hungary, Switzerland, Czecho-Slovakia, Russia, Poland, Denmark, Norway, Sweden, Mexico, Central and South America, Canada, and the United States. It has been, of course, impossible to hold the entire exhibition together with one central idea, for even the ideal of excellence is untenable in the face of many and varied interpretations. The only thing to be done, and this the Committee has attempted, was to conserve a unity of spirit within the group; and the result of this effort, which was persistently maintained throughout some seventeen countries, will be to render each group very different from its neighbor and homogeneous in itself. This cross section will show, not so much different artistic developments, for much interchange of ideas and much rubbing of elbows has somewhat eliminated that, but it will demonstrate the varying points of view from which a definite problem may be regarded and interpreted, and that the chauvinism which seems to be infecting our very daily bread has not passed painting by.

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The New Tool

ROBERT MAYNARD HUTCHINS
President, the University of Chicago

[In May 1932 the University of Chicago announced its plan to produce talking motion pictures to be used as an integral part of its curriculum under the New Plan. The first two films of the *Physical Science* series have now been completed. They are "Oxidation and Reduction" and "The Molecular Theory of Matter," both produced under the supervision of Hermann I. Schlesinger, Professor of Chemistry, and Harvey B. Lemon, Professor of Physics, the University of Chicago. Three other films are now in process and will soon be ready: "Energy and Its Transformation," "Electrostatics," and "The Velocity of Light." Others will follow as rapidly as they can be produced. The initial *Physical Science* film series will comprise twenty talking pictures. It is planned to produce similar talking-picture courses of twenty films each in the *Biological Sciences*, the *Social Sciences*, and the *Humanities* if sufficient educational institutions lend their cooperation to the venture.

A printed syllabus, containing a concise overview of the subject treated, much broader than the content of the talking picture, the complete text of the lecture, a description of each scene, bibliographies, and suggestions for class procedure before showing the pictures and for immediate follow-up, accompanies each film as an outline for study.

These films are made for 35-mm. Western Electric sound-on-film projector, and are also available for the new portable Western Electric 16-mm. sound system. Films, sound equipment, and printed syllabi may be secured from the University of Chicago Press, 5750 Ellis Avenue, Chicago.—*The Editor.*]

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For three reasons the University of Chicago is interested in the development of educational sound pictures. It wishes to use such pictures in its own general courses for freshmen and sophomores; to experiment with the possibilities of the medium; and to make available for universities, colleges, high schools, and adult-education groups the results of its experiments with the curriculum and with sound pictures.

Two years ago the University experienced a complete administrative reorganization which led to a complete educational reorganization. A new college appeared, devoted to the task of finding out what a general education ought to be, and having jurisdiction over freshmen and sophomores. The college faculty, facing the task of manufacturing a curriculum that might be expected to assist these students in getting a general education, decided to offer a general lecture course in each of the following fields: the humanities, the biological sciences, the physical sciences, and the social sciences. These courses, now in their second year, have been successful beyond the hopes of the University staff.

But particularly in the natural sciences it has become clear that there are new difficulties in presenting these subjects by the lecture method. Since the object of the courses is cultural it seems unwise to insist on as much laboratory work as would be demanded in professional classes. Since the classes are large, demonstrations in the lecture room are not always effective, but are almost always expensive, cumbersome, and time-consuming.

Faced with these problems the University began discussions with Erpi Picture Consultants, a part of the Bell System, which had for four years been investigating the possibilities of sound pictures in education, and found them willing to cooperate in producing pictures which could be made an integral part of the educational program.

These discussions revealed the information that although educational sound pictures were still in a comparatively rudimentary stage, their possibilities were much greater than imagined, and the University became convinced that in the business of making pictures for use in its own courses, it could conduct experiments to discover in detail what the advantages and limitations of the medium were. This is the first time that a university has definitely undertaken to incorporate sound pictures in its educational program. It is the first time, too, that a university as such has set itself to discover experimentally what can be done at all levels with sound pictures in instruction.

The discussions with Erpi Picture Consultants also suggested the desirability of making the new pictures available to other educational agencies. It seems to be generally agreed that there is a demand on the part of such institutions for such films of unquestioned scientific merit as might be incorporated in an educational scheme. The demand for isolated, scattered pictures is not great; but a series that might be treated either as a course or a part of one is much wanted. Pictures that could be used with freshmen and sophomores could also be employed successfully in high

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school classes. These same pictures could be used, with slight changes in the method of instruction, in classes offered by the various institutions devoted to adult education. At the same time a good deal of interest had been aroused in the new curriculum at The University of Chicago. Educators from all over the country have purchased and many have begun to use the printed syllabi of the new courses. Bearing these various considerations in mind, the University of Chicago agreed to distribute its new pictures to other educational organizations, through the University of Chicago Press.

I wish to utter two words of warning:

1. These pictures are not entertainment. The University does not wish or propose to jazz up education. The two films now ready are serious attempts to discover what subjects in these fields can best be treated by this method.

2. These pictures are not intended to replace the teacher. They cannot have that effect. The pictures without a teacher lose nine-tenths of their value. Without an instructor the films are merely an interesting series of scientific experiments. With a competent teacher they become a potent educational instrument.

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ΦBK Elections

At its annual meeting, held at national headquarters, 145 West 55th Street, New York City, the Senate of Phi Beta Kappa elected Dr. Alvin S. Johnson, Director of The New School for Social Research, to the editorial board of THE AMERICAN SCHOLAR for a term of three years.

Dr. Johnson has served on the editorial boards of *Political Science Quarterly* and *The New Republic*. He is now Associate Editor of the *Encyclopedia of the Social Sciences*, an editor of the *Journal of Adult Education*, and a member of the editorial board of *The Yale Review*. He has much to contribute to THE AMERICAN SCHOLAR, particularly along the lines of political science and economics.

At a recent meeting of the Trustees of the Phi Beta Kappa Foundation, Senator Owen D. Young was reelected Chairman and Senator John Huston Finley was reelected Vice-Chairman. These two, with Senators Frank Aydelotte, Raymond B. Fosdick, and Nelson Glenn McCrea form the Executive Committee.

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Turkey, a Social Laboratory

HELEN VROOMAN
International College, Izmir, Turkey

At present Turkey is a social laboratory with a host of experiments under way. Within the last

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decade Gazi Mustafa Kemal Pasha has pulled this Oriental country up from its foundations and faced it Westward. He has executed reforms which ordinarily would have been the results of years of propaganda. The hold of Islam is greatly weakened, and secularization is the policy. The fez has gone and the veil is going, and with them is going the Oriental mentality. The Arabic alphabet has been discarded and Turkish in Latin characters steps out as the most phonetic language in the world. The Government has taken hold of the illiteracy problem in an adult education program which has brought the ability to read and write to thousands of mature people in the last three years. The normal schools are busily grinding out very youthful Dewey and Thorndike devotees to man the new public schools which are springing up all over the country.

A seeming paradox exists in that side by side with the Westernization policy is an equally strong nationalistic program. The Turks are eager to build up a feeling of race pride. They wish their children to hold up their heads as members of a race that has contributed to world civilization. Hence a new school history has been written under the supervision of the President. These volumes depict civilization springing from Central Asia, the ancestral home of the Turks. The Turkish language is being purged of Arabic and Persian words. The *Koran* for the first time is read in Turkish in the mosques. Turkish goods are advertised. Turkish flags and innumerable pictures of the Turkish President abound.

This national consciousness is leading the Turks to see that they can never succeed economically as a nation until they are on a basis of good will with their neighbors. In the last two years, therefore, they have entered into real fellowship with the erstwhile bitterly hated Greeks. There have been exchange visits for sports, education, business, and diplomacy. There has recently been issued in Turkey a new stamp, depicting a large olive tree growing up out of the Near East with a root extending to each national capital of the Balkans and Turkey.

Such a program which endeavors to carry a country from a narrow, isolated Eastern mentality to a progressive European one in a decade needs leadership. Where is this leadership trained? In the national university in Istanbul there are about three thousand students, and in addition a new university is being developed in Ankara. Each year, moreover, about thirty students, at Government expense, are sent to study in Europe or America on condition that they give several years' service in any place in the country that the Government requires. Perhaps more students are in France and Germany than any other countries. There are also the American colleges, such as Constantinople and Robert Colleges in Istanbul and International College in Izmir.

The old and the new, the East and the West, are meeting and mingling today in Turkey. It is a country where valuable sociological study could be made. International College in Izmir has an institute of Turkish studies and Izmir offers a good center from which to work.

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Recently three Americans have written doctorate theses on Turkish subjects. Professor Wright of Princeton wrote on *Early Turkish American Relationships*, Professor Allen of Lafayette on *Turkish Religion*, and Mr. Gordon of the University of Pennsylvania on *Recent Turkish American Relationships*. Professor Riefsdahl of New York University has made a study of Turkish art.

Among other fields which might be covered are: The changing status of the family, the change in the position of Turkish women, the results of adult education, the effects of the "white collar" idea in economic life, the recreational life of the Turks, the work of the national young men's club, the beginning of social service movements, Turkish industrial attempts, efforts to build Græco-Turkish friendship, village life, effect of Western moving pictures on Turkish mentality.

A nation traditionally Moslem and Oriental cannot go through the impact of Westernization that Turkey has had without offering many fascinating social phenomena. This is especially true since the rest of the Near East is following the Turkish lead.

The Institute of Turkish Studies of the International College, which possesses an excellent collection of books in English on Turkish life, will be glad to guide the investigations of young graduate students who wish to make original studies of current social problems. Among its advisors are Aziz Bey, Director of the Museum, Istanbul, Turkey; Ernest Pye, Director of the Turkish Press Translation Service; Sir William Ramsey, author of *Historical Geography of Asia Minor;* Sir E. Denison Ross, Director of the School of Oriental Studies, the University of London; A. J. Toynbee, author of *Turkey* and *The Eastern Question;* and G. Howland Shaw of the American Embassy, Ankara, Turkey.

Scandinavian Literature at Yale

It is not generally known that there is a rich deposit of Scandinavian literature in the United States, especially in the older universities. The Yale University collection, one of the most complete in America, containing important literature of the Scandinavian countries from the sixteenth century to the present time, as well as the literature of their colonies, consists, in the Comte Riant gift alone, of over 5000 bound volumes; 500 unbound volumes, 22,000 dissertations and theses from various Swedish institutions, which include first writings by men later outstanding in the fields of science and literature; and 50 manuscripts. Included in the collection are many costly illustrated works on archeology, numismatics, architecture, art, and costumes; literally dozens of old dictionaries, grammars, and glossaries dealing with the languages of the countries on the Baltic; much material on the history, geography, and biography of each Scandinavian country; copious Latin historical and legal works; scores of books by and about Emanuel Swedenborg, Swedish scientist and seer, including a copy of *Regum subterraneum sive Minerale de ferro*, published in 1734; about 300 items of Carolus Linnaeus' works, including the first editions of his principal botanical and biological writings, the most important of which is his *Systema naturae* published in 1735, and 184 theses written under his direction.

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A Venture in College Finance

BEGINNING with the academic year 1933–34, Rollins College will adopt a program recently advocated in principle by officers of the General Education Board and other educational experts, and entirely new in college finance. The plan budgets the college on an adequate but not an extravagant financial basis; divides the annual operating expenses by the estimated student enrolment, not to exceed five hundred; and fixes the cost of board, room, and tuition of the individual student as one unit cost of the total. For reducing tuition to those worthy and desirable students who can affirmatively prove they cannot pay the full rates, the plan makes available the income of the present endowment plus any gifts which may be received for loans or scholarships.

This Unit-Cost Plan will apply to all students except those whose parents are bona fide residents of the college community and to whom, provided they maintain approved standards, a limited number of partial scholarships will be available; and those of approved standing now at Rollins who can affirmatively show that they would have to leave college if required to meet the increase.

The Unit-Cost Plan was suggested by a report, published by the United States Bureau of Education, on the receipts of privately endowed institutions of higher learning for the years 1923–24. At that time a little less than one-half the current expenses of endowed colleges and universities came from students; one-quarter from the interest on endowment, and another quarter from gifts and other sources. These privately supported American colleges were originally founded as charitable institutions. It was expected that they would be maintained by gifts from philanthropic people. An education at such a college was virtually free for it was assumed that the students graduating therefrom would go into the ministry or teaching or other public service professions in which the financial returns to them would be small but the gains to society large. Today, however, probably a majority of the students go to college for business or social considerations. Under these changed conditions it seems fair to ask the well-to-do students to pay for the benefits received; and to give to those who are unable to pay the full cost of their education, the endowment income and gifts hitherto distributed equally to all students, irrespective of their ability to pay the full amount expended for them.

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Discussion

Contra el Lettor—Contra el Yankee

ONE-THIRD of a century ago, Mr. Walter S. Carter was one of the leading members of the American bar. His son-in-law, Mr. Charles Evans Hughes, is the well-known member of our Supreme Court. Whenever I receive a new issue of THE AMERICAN SCHOLAR I am reminded of some remarks made before the Story (Columbia) Chapter of Phi Delta Phi, in 1898 by Mr. Carter, a few of which are as follows:

"I have heard several addresses to law graduating classes, and this is their gist: be honest, be high-minded, be truthful, be honorable, and all such rubbish. Why of course you will be honest and high-minded and truthful and honorable."

THE AMERICAN SCHOLAR is high-minded, truthful, honorable, and honest, but it seems to me that what we need is more discussion *in its pages* of the excellent articles that are being printed therein. I mean reviews, constructive criticism, etc., by the readers, and not so much ballyhoo about what a good magazine it is, or is not.

In an editorial in the March 1932 issue, mention is made of a Phi Beta Kappa man who had to be begged for reasons why he would not make a contribution to THE AMERICAN SCHOLAR. When he did finally speak, his criticism was fiery. It seems to me that it would have been better for him to have come forward with an article of his own free will and thus have had it off his chest. Free expression through its columns will make a better AMERICAN SCHOLAR. None of us are beyond the realm of learning.

Under "Discussion" in the January 1933 issue, we find remarks from statesmen, authors, editors, lawyers, ministers, professors, doctors, and housewives, telling us how good we are, but nothing in review or criticism of the excellent articles carried.

The "Fraternity Editor" says, "There have been a number of articles which have occasioned a great deal of discussion amongst a few of us." Why does he not place some of those discussions in writing, and pass them along to the readers of THE AMERICAN SCHOLAR? So far I have seen only one real review of an article —that by Gregory D. Walcott of Long Island University, whose comment was printed in May 1932.

THE AMERICAN SCHOLAR will be just what the readers, writers, and editors make it. If the readers do not help, it will be hard sledding.

The article, "Can the U. S. A. Flout Spanish-American Sentiment?" by Carleton Beals, was very good; but one-sided. He takes altogether the "Contra el Yankee" side. True, two wrongs will not make right, but much can be truthfully said on the other side. For example:

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Territory between the Putumayo and Caqueta rivers, including a corridor from the Putumayo river to the Amazon river, with the port of Leticia, was definitely apportioned Colombia by the Salomon-Lozano Treaty signed and ratified in 1928. Notwithstanding the treaty, the port of Leticia was seized by Peruvian civilians on September 1st, 1932, and is now the subject of diplomatic controversy between the Republics of Peru and Colombia. If our honorable Spanish-American neighbors were as honorable as Mr. Beals would wish us to believe, it would seem that the right thing for Peru to have done would be to have sent soldiers and removed her belligerent civilians from Colombian territory.

They have sent the soldiers, but not to remove the civilians. It now looks very much like war between our two South American sister republics, since Colombia is sending gunboats up the Amazon river to Leticia. This is one example only—there are many others.

Walter S. Wheeler,
Civil Engineer and Surveyor.

Diabolical Thought?

To the Editor:

Our magazine, The American Scholar, is preeminently praiseworthy, but there is a chance for Phi Beta Kappa to do something utilitarian as well as fraternal. The idea was provoked by countless contumelious remarks varying somewhat in detail but all reducible to the simple formula: "Well, your key has done little for you in the business world. A Phi Beta but no job. What an anomaly!" The poor Phi Beta victim of the depression, more often than not, tries to ignore the indictment, thinking it *infra dignitatem* to engage in altercation, but the words rankle none the less.

Shall we not take our cue from the college alumni associations with their organized machinery of Employment Committee, Regional Representatives among employers, Employment Bulletins, and so on. Nor is such a program a *beau geste* calculated to propitiate an anxious graduate or two. On the contrary, it is (in most cases, at least) a live, cooperative enterprise, and many a recent graduate has found, more or less to his surprise, that the business contact made through an alumni agency of such a nature resulted in his obtaining a fine position.

Without wishing to make any extravagant predictions, under prevailing business conditions, for the success of the program, I should like to see an united effort within Phi Beta Kappa to find positions for Phi Beta Kappa men. Of course, it could be only a very unusual situation, an emergency, which would make such a thing either justifiable or necessary, but that situation is with us here and now, and an active "Phi Beta Kappa for Phi Beta Kappas" seems to me to be a primary desideratum, both necessary and justifiable. The movement could be conducted in a thoroughly dignified and punctilious manner worthy of the Fraternity. Even the Devil, so it is said, takes care of his own. Shall our Fraternity, then, be shamed by the Devil? Diabolical thought!

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Believing, therefore, that there must be Phi Beta Kappa men among employers who would be glad to assist less fortunate brothers among the unemployed, I submit these facts to you in the nature of a suggestion, inviting your criticism and advice.

Yours sincerely,

WALTER H. AUSTIN,
Φ B K, *St. Lawrence 1931.*

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The October Number in Action

[In using the October number of THE AMERICAN SCHOLAR as a basis of discussion for its open meeting, the Arizona Chapter put this quarterly to exactly the use we hope other groups as well as Φ B K Chapters will make of its articles.

Frank C. Lockwood of the English Department writes us: "We decided to invite about twenty-five of the leading students on the Campus and to organize the program around five of the leading topics in the magazine. Each topic was assigned to the Φ B K member best fitted to criticize and summarize it. The event was one of real intellectual excitement—something all too rare in America. About fifteen minutes was allowed for each review and all were delivered with wit and grace. I say this so that you may realize how very difficult a task it is in such condensed papers to convey the stimulating spirit of the occasion. There were present such eminent scholars as D. Byron Cummings, Dr. A. E. Douglas, Dr. John Driscoll Fitz-Gerald, Dr. Sture-Holm of the University of Lund, Sweden, and many others of distinction."—*The Editor.*]

I ADMIRE the brilliant intellect of Louis Adamic ("The Passing of American Individualism" in the October AMERICAN SCHOLAR) without agreeing fully either with his methods or his conclusions. This is an admirable article and it speaks for a vigorous mind, a man who has something to say and is not afraid to say it. We all admit with him a certain discontent and boredom in our economic life in the 1920's. We do not admit that simply because a novelist in the 1920's did not portray this

Continued on page 250

Metropolitan Museum Colorprints

· PAINTINGS ·
Chinese
Japanese
Indian
Persian
European
American

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restlessness, this capitalistic chaos, this dog-eat-dog individualism, he was inferior. The author says, not in so many words but in essence, that Sinclair Lewis, Theodore Dreiser, John Dos Passos, and Upton Sinclair were the only intelligent novelists in the decade from 1919 until 1929. Novelists? Despite the Nobel Prize Committee *et al.*, I should rather call them social and economic reformers. We may note in passing that to prove his point Mr. Adamic has named only the blatant, the militant, the sensational, and the best-seller. That vast group of conservative writers headed by Edith Wharton and Willa Cather is conveniently ignored. I believe it to be extremely dangerous to infer that all novelists who did not reproduce evidences of our economic life were not cognizant of their presence. After all, should creative literature be primarily interested in living conditions of a certain age?

In the second place, the author says that the literature "in the near future will be a product among the suffering and sensitive people of the United States of a widespread impulse to revolt." Certainly, we like sheep have gone astray but I do not think that the makers of our literature can be herded back into the fold with as much ease as a flock of sheep. Literature thrives on eccentricities, on individual characteristics. I cannot view our future literature as a product of any one economic condition. Literary people, in the true meaning, are above propaganda, they are bigger than depressions, they should have higher aims than economic collectivism. A standardized, mechanized, collective literature? Let us hope to achieve in our American literature the great, the lasting, the universal.

I can do nothing but commend the author for his presentation of the ills of our age. Class lines are breaking down; unemployment is increasing; taxes are doubling; the farmer is panicky. Individualistic competition, the laissez-faire in production and consumption, have ruined us financially. We need some sort of control, some form of collectivism, wisely administered. We have been individuals too long. Mr. Louis Adamic is here the thinker alongside Stuart Chase (*A New Deal*), Walter Lippmann (*Interpretations*), and James M. Beck (*Our Wonderland of Bureaucracy*).

And what is to be the remedy? A dole? Americans abhor it. Another boom? That would be more fatal than the one in 1929. Fascism? That means fear and not intelligence. Governmental reorganization? Slow and painful. Technocracy? Who knows? Revolution? We pray not. A state modelled on New Russia?

Then where is the ray of hope? Here is where Mr. Adamic is at his best. He has a battle cry and it rings out: *"Mort aux vieux!"* The old politicians, the aged laws, the destructive individualists have failed. The future is for the youth. Accuse the college student of everything else except mental inertia. The freshman, the sophomore, the junior, the senior want to see, to hear; they want to know *why*. Whatever happens, America is in the hands of ambitious young men and women, people of quality, ability, daring.

G. Ward Fenley,
Assistant Professor of French,
University of Arizona.

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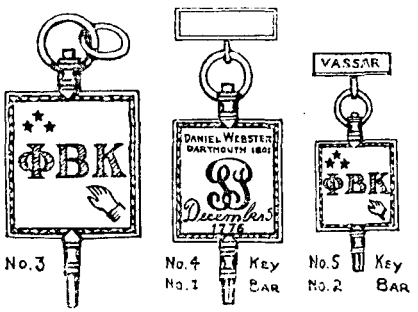

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